United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Cornell University
Agricultural
Experiment Station

Soil Survey of Jefferson County, New York

How To Use This Soil Survey

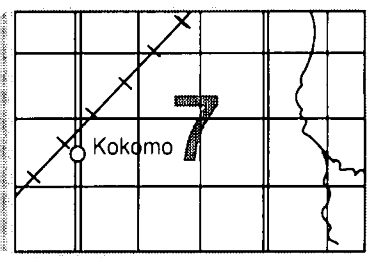
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

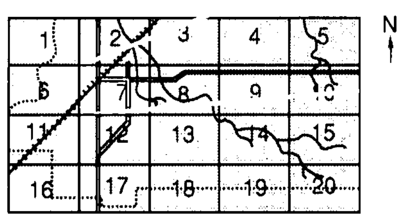
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



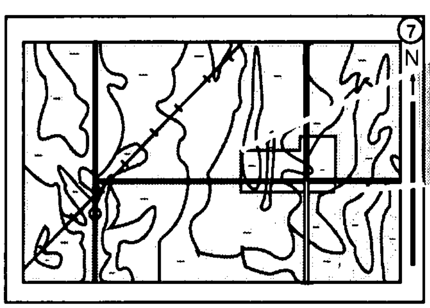
MAP SHEET

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



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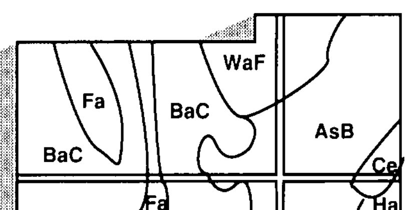

AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, handicap, or age.

Major fieldwork for this soil survey was completed in 1980. Soil names and descriptions were approved in 1981. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1981. This survey was made cooperatively by the Soil Conservation Service and the Cornell University Agricultural Experiment Station. It is part of the technical assistance furnished to the Jefferson County Soil and Water Conservation District. Partial funding for the survey was provided by the Jefferson County Board of Supervisors through the Jefferson County Soil and Water Conservation District. Additional funding was provided by the U.S. Army, Department of Defense, for mapping the Fort Drum Military Reservation.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

This soil survey supersedes the soil survey of Jefferson County, New York, published in 1911 (*11*).

Cover: Typical dairy farm operation in the foreground on the Blasdell-Teel-Phelps general soil map unit in the south-central part of Jefferson County. In the background, toward Lake Ontario, the Collamer-Galway-Niagara general soil map unit is used extensively for agriculture.

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Soil Series

Issued September 1989

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Foreword

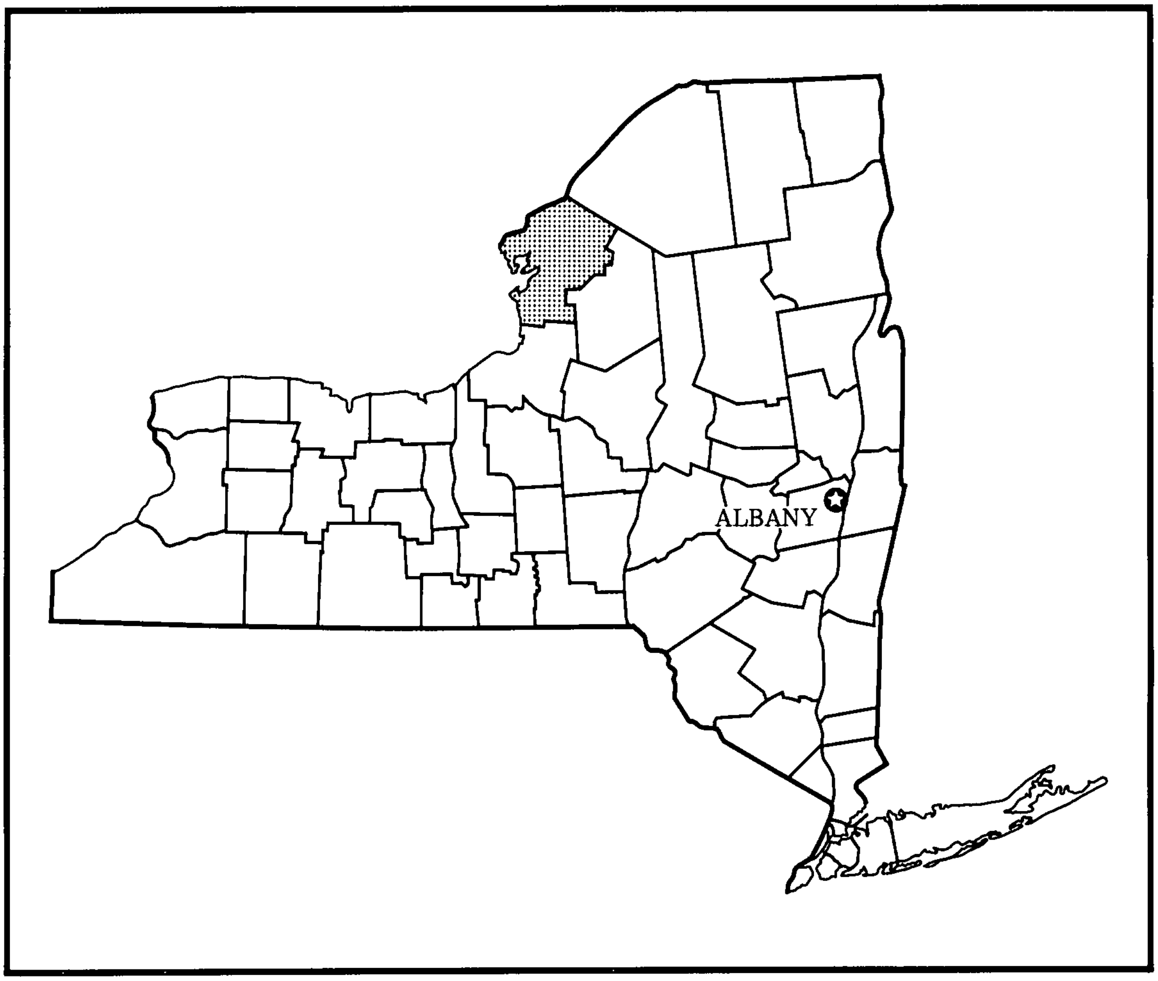
This soil survey contains information that can be used in land-planning programs in Jefferson County, New York. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Paul A. Dodd
State Conservationist
Soil Conservation Service



Location of Jefferson County in New York.

Soil Survey of
Jefferson County, New York

By Letember McDowell, Soil Conservation Service

Fieldwork by Robin A. Mangini, Letember McDowell, Luther H. Robinson, and Kenneth W. Van Doren, Soil Conservation Service

Other participants in the fieldwork were Steven C. Carlisle, Roger J. Case, Willis E. Hanna, Leslie W. Kick, Kippen H. Kolesinskas, Robert J. Landrey, and C. Erwin Rice

United States Department of Agriculture, Soil Conservation Service, in cooperation with
Cornell University Agricultural Experiment Station

JEFFERSON COUNTY is in the northern part of New York State, at the east end of Lake Ontario, in what is locally called the "north country" (*11*). It has a total area of 1,253 square miles, or 801,878 acres (*5*). Watertown, the county seat and largest city, has a population of about 27,861, or about 32 percent of the county's population of 88,151 (*5*). Watertown is located in about the center of the county along the Black River, which roughly separates the county into a northern half and southern half. Elevation ranges from 246 feet above sea level at Southwicks Beach, on Lake Ontario, to 1,700 feet in the town of Worth, along the Lewis County line.

Picturesque shoreline extends more than 150 miles along the St. Lawrence River, Lake Ontario, and their offshore islands. The larger of these are Stony, Galloo, Fox, and Grenadier Islands in Lake Ontario and Carleton, Grindstone, Wellesley, Picton, Murray, Bluff, Grenell, and Round Islands in the St. Lawrence River. The Thousand Islands Bridge spans the St. Lawrence River connecting Wellesley Island to Canada and the U.S. Mainland. Of the 13 state parks in the county, the 3 parks on Wellesley Island are open seasonally to both motorists and boaters. The U.S. Customs and Immigration Service is located at the Thousand Island Bridge facility on Wellesley Island. Boldt Castle and many other tourist attractions are featured in the Thousand Islands. The St. Lawrence River and Lake Ontario make up the St. Lawrence Seaway, which connects the Great Lakes and the Atlantic Ocean.

The land in Jefferson County is both privately and publicly owned. Agriculture is the major industry. The county is one of the major milk-producing counties in the state. Some other important agricultural enterprises are raising turkeys for market and chickens for egg production; apiculture, or honey production; and sugarbushes for maple syrup production. The tourist industry ranks a very close second to agriculture.

The public lands in the county are owned and managed by various units of federal, state, and county governments. The Department of the Army owns and manages 95,300 acres in Fort Drum Military Reservation. It is the Nation's "cold weather" training facility. It also serves as a year-round training facility for the National Guard and Army Reservists. Some tracts on Fort Drum are seasonally opened to sportsmen for hunting and fishing. About 26,000 acres on Fort Drum was not mapped in this soil survey of the county. These unmapped areas are primarily impact zones and are restricted to nonmilitary personnel.

The New York State Department of Environmental Conservation owns and manages sizeable tracts of land in the county. Its Division of Forestry manages more than 16,000 acres of natural woodland and reforested tracts mainly on the Tughill Plateau (*4*). There are a few small tracts of state forest land scattered in other parts of the county. The department's Division of Fish and Wildlife manages nearly 39,400 acres of coastal lands and wetlands, mainly along the shores of Lake Ontario,

the St. Lawrence River, and the Perch River (*17*). The Department of Parks and Recreation owns and manages 13 state parks that provide opportunities for camping, boating, bathing, and other recreation. Seasonally, most state-owned land provides opportunities for hunting, fishing, camping, skiing, snowshoeing, snowmobiling, sightseeing, and other recreation. Some county and private facilities also provide some of the same recreation opportunities to the public. Jefferson County owns and manages more than 5,000 acres of public forest consisting of both natural stands and reforested areas. Both state and county forests offer leases to commercial loggers, and some contract sales are made for firewood.

An earlier soil survey of Jefferson County was published in 1911 (*11*). The present survey updates the earlier one and provides additional information and larger scale maps that show the soils in greater detail.

General Nature of the County

This section provides general information about physiography and geology, drainage, water supply, climate, farming, history and development, and transportation in Jefferson County.

Physiography and Geology

Bernard S. Ellis, geologist, Soil Conservation Service, helped to prepare this section.

Jefferson County lies within three physiographic areas in the northern part of New York (*3*). They are the St. Lawrence Valley, in the northwestern part of the county along the St. Lawrence River; the Erie-Ontario Plain, in the southwestern part, east of Lake Ontario; and the Tughill Plateau, in the southeastern part.

The St. Lawrence Valley and the Erie-Ontario Plain comprise most of the total land area in the county. Together, they are called the "lowlands" (*11*). The topography varies from nearly level to rolling and broken, commonly with steep ledges of rock. Elevations range from 246 feet mean sea level (m.s.l.) near Lake Ontario and the St. Lawrence River to 650 feet m.s.l. on the beach of glacial Lake Iroquois, south of the city of Watertown.

Some conspicuous features of the lowlands are the "clay plains," almost level, prairie-like areas of clayey soils, and the "pine plains," an extensive, sand delta in the Black River Valley, the location of part of Fort Drum Military Reservation (*11*). In Plessis, where flat areas and ledges of almost bare sandstone are exposed, striae marks in these rock surfaces indicate the northeast-southwest movement of glacial ice. In the town of Henderson, near Lake Ontario, extensive, flat areas and ledges of almost bare limestone occur.

Other features are the roche moutonnees, or sheepback rocks, of Precambrian age near Alexandria Bay and also the Thousand Islands of the St. Lawrence River. The smallest of these islands are rocks of merely a few square yards projecting above the water surface. Other features of lowland topography are the very irregular shoreline and a group of fourteen small picturesque lakes in the Indian River Watershed, near Theresa.

The uplands are the Tughill Plateau, also called the "highland area" (*11*). Elevations range from 650 to 700 feet m.s.l. just south of the Black River Valley near West Carthage and Champion to 1,700 feet m.s.l. east of Worth Center. The topography is rolling to hilly. Some features of the uplands are the gulfs, or gorges, where streams have cut narrow channels 100 to 250 feet deep in many places into the soft, underlying shale, leaving almost perpendicular cliffs or sidewalls (*11*). The most spectacular of these gulfs is Inman Gulf through which the Gulf Stream flows. The gorge is 200 to 250 feet in depth for several miles. In South Sandy Creek, west of Allendale, a deep gorge has been cut. Called Lorraine Gulf, the longest of any in the area, it extends eastward to Worth and in some places is more than 200 feet deep (*10*). Other features are the almost level limestone areas and the very steep, limestone escarpments south and east of Watertown and two prominent valleys, Rutland Hollow and the valley of North Branch Sandy Creek.

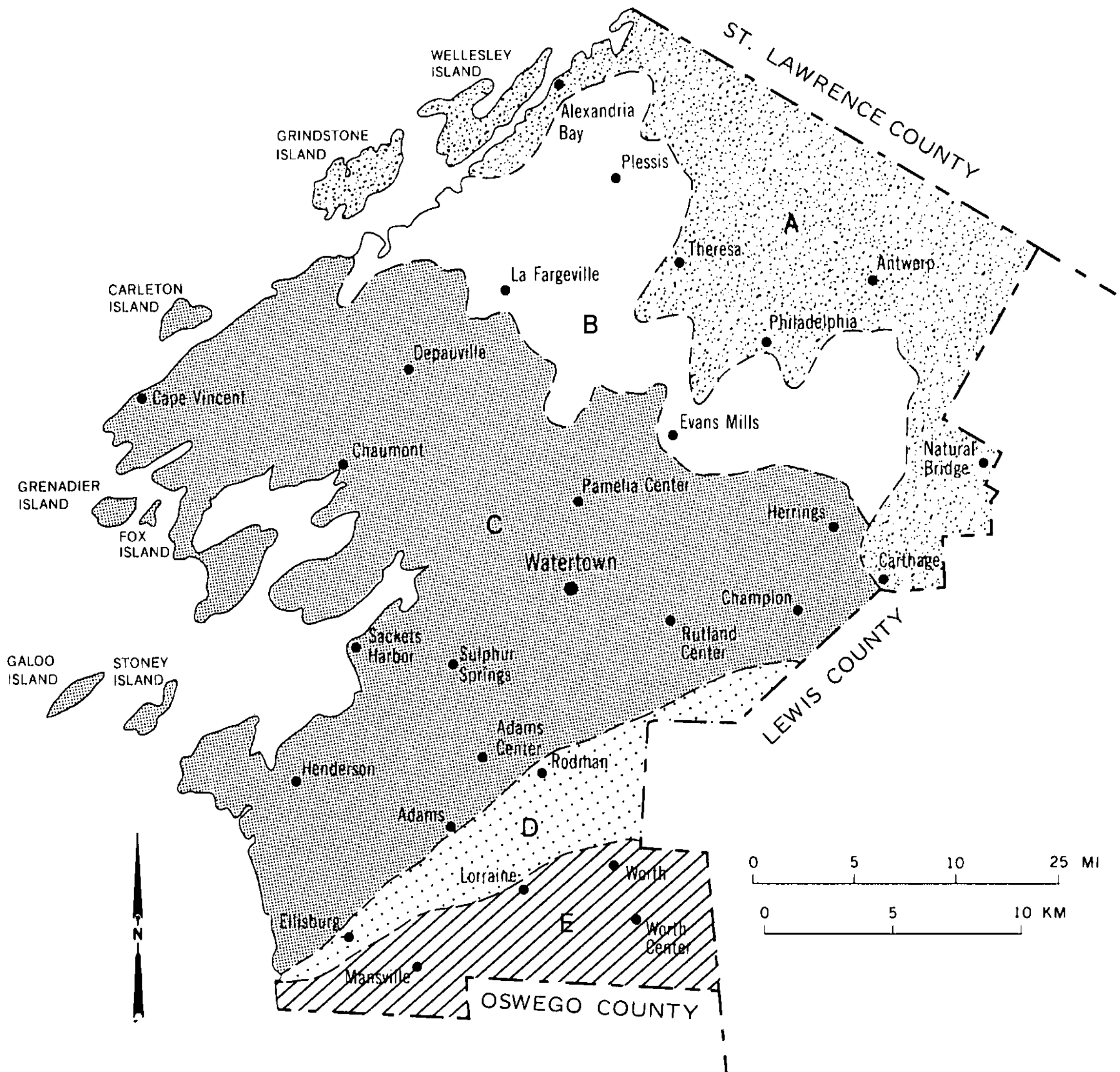
The physiography, relief, kinds of rock, and rock structures in the county are somewhat interrelated. The distribution and kinds of bedrock in Jefferson County are shown in figure 1. Geologists have compiled the following history of these kinds of rocks (*6*).

The Grenville Series rocks were deposited as mud in an ancient sea. These are some of the oldest known sedimentary rocks in the world, and are 1 to 2 billion years old. They contain graphite, probably the oldest known evidence of life on earth. They are in a few tiny areas in the northeastern corner of the county.

A huge upwelling of molten rock occurred approximately 700 to 800 million years ago. The molten rock cooled as granite and syenite, and formed the Adirondack Mountains, which extend to the northeastern edge of Jefferson County. The Grenville Series rocks were twisted and tilted at this time, and the limestone was changed to crystalline marble containing specks of graphite. This Precambrian rock is on the Frontenac Ridge and the Adirondack Lowland.

Another sea invaded the county about 500 million years ago. It left the sandy deposits that became the hard, acid and dolomitic sandstone now exposed across the northeastern part of the county. This rock is of Cambrian age.

Most of the county south and west of LaFargeville was covered by a third sea about 450 million years ago. The widespread belt of limestone across the center of the county, the dark shale in the southeast, and the acid, fine-grained sandstone in the southeast corner of the



LEGEND *

A	Crystalline rocks, gneiss, granite, marble. Precambrian age. (some sandstone inclusions 1.)
B	Sedimentary rocks—sandstone & Dolomitic sandstone. Cambrian age.
C	Sedimentary rocks—limestone. Ordivician age.
D	Sedimentary rocks—shale. Ordivician age.
E	Sedimentary rocks—sandstone. Ordivician age.
*	Compiled from field observations and New York State Museum Bulletins.

Figure 1.—Bedrock geology of Jefferson County, New York (plan view).

county were deposited then. This latter episode of rock formation is of Ordovician age.

Uplifts of the land and erosion occurred until glacial times, about a million years ago. During these uplifts,

heat and pressure altered much of the granite and syenite rocks to gneiss.

The entire county was covered several times by continental glaciers, or ice sheets of the Wisconsinan stage of the Pleistocene Epoch (*10*). The glaciers scraped bare much of the hard, gneiss rock, and ground up the much softer rocks to the south. The ground rock, called glacial till, is one of the parent materials of many present-day soils of the county. It consists of a heterogeneous mixture of sharp-edged stones, gravel, sand, silt, and some clay. Its composition depends on the kind of rock from which it is derived. The glacial till veneer in much of Jefferson County is thinner than in adjoining counties because of strong ice movements from northeast to southwest along the border of the Adirondack Mountains. South of Watertown, the glacier picked up the more clayey materials from the fine-grained limestone and shale bedrock. In this way, it became overloaded and smeared elongated, teardrop hills of till, called drumlins, upon the bedrock. These hills are very common in the towns of Adams, Rodman, Rutland, and Champion, and are mostly mapped as Nellis and Madrid soils. Radiocarbon dating has indicated that the last ice sheet covering Jefferson County receded about 10,000 years ago.

The huge ice sheets melted because of a shift toward a warmer climate. Great volumes of water rushed from the melting ice, carrying and sorting large quantities of glacial till. Outwash, the coarsest water-rounded gravel and sand, was dropped in the valleys, as around the towns of Adams, Ellisburg, Champion, and Clayton.

The land surface, geologists generally believe, was several hundred feet below its present level during the glacial period because of the weight of the ice. As the ice melted from south to north, the land surface rose at intervals to near its present height. The low areas just south of the melting ice became lakes. They filled with glacial meltwater carrying silt and clay, the finest particles from the glacial till. The extensive silty areas southeast of Watertown formed in this manner in shallow, glacial Lake Iroquois (*10*). This silty parent material of Collamer and Niagara soils fills all the areas between the drumlins around Belleville. Most of the drumlins extend above the level of the silts, much as islands of glacial till surrounded by a sea of silt. The sand and gravel ridge south of Watertown, which U.S. Highway 11 follows, is believed to be the prominent beach ridge of this lake.

Another glacial lake stage, known as Gilbert Gulf, existed for a time north and west of Watertown. The widespread clay deposits laid down in Gilbert Gulf now form the Vergennes and Kingsbury clayey soils, northwest of Watertown. In the northeastern part of the county, clay and silt fill the low areas between the rounded gneiss rock hills called roches moutonnees, or sheepback rocks. They are much like islands of rock surrounded by a sea of clay and silt.

Glacial meltwater streams carried huge volumes of sand into these glacial lakes. The droughty, acid Windsor and Plainfield soils formed in these sand deposits. The largest area of sand in the county is part of the Fort Drum Military Reservation.

Soon after the Gilbert Gulf waters drained away, strong winds swept across the drying clay plains north of Watertown. The winds picked up the coarser soil particles and deposited a blanket of silt on the high limestone plateau southeast and east of Watertown. Lowville soils formed in these silt deposits, which are 18 to 36 inches thick over limestone-influenced glacial till.

Drainage

Lake Ontario and the St. Lawrence River receive most of the drainage waters of the county, and the bigger portion of the watersheds empty into the lake. The Black River, the largest stream in the area, enters the county at Carthage, flowing westward through the city of Watertown and emptying into Black River Bay at Dexter.

In the southern part of the county, Lake Ontario receives drainage from a number of small streams. The largest of these are Sandy Creek, South Sandy Creek, North Branch Sandy Creek, Mill, Stony, and Skinner Creeks. The Sandy Creeks originate in the uplands of the area where they flow through picturesque gorges cut into dark shale bedrock. The Sandy Creeks are fed by numerous small tributaries, many of which are in the towns of Lorraine, Rodman, and Worth. Sandy Creek and South Sandy Creek come together in a large marshy area called the Lakeview Wildlife Management Area and then flow through a ridge of beach sand where they enter Lake Ontario.

The extreme southeastern part of the town of Worth is drained by the Mad River Watershed, which empties into the Salmon River in Oswego County.

The drainage into the lake north of Black River is through the Perch River, the outlet of Perch Lake, Three Mile Creek, and Mud Creek. All of these streams flow in a southwesterly direction, parallel to the St. Lawrence River but in the opposite direction. Perch River flows beneath a natural bridge of limestone bedrock for about one-half mile and then resurfaces just before entering Black River Bay at Dexter.

The portion of the county that drains into the St. Lawrence River consists of the towns of Alexandria Bay, Theresa, Antwerp, Philadelphia, and part of Cape Vincent, Clayton, Orleans, Leray, and Wilna. Only a small portion of the area drains directly into the river from Jefferson County. This is through French Creek at Clayton, Cranberry Creek at Goose Bay, and Crooked Creek near Chippewa Bay.

The rest of the county is drained by streams that flow into St. Lawrence County to the northeast and follow circuitous routes into the St. Lawrence River further along its course.

The Indian River, the principal stream of this system, enters the county from the northwestern part of Lewis County and flows southwesterly to Evans Mills where it takes a circuitous course, heads northwesterly, and enters St. Lawrence County just north of Hanson Bridge. Its principal tributaries are Rockwell, Black, and West Creeks. Red and Muskellunge Lakes and the Lake of the Woods also drain into the Indian River just above the St. Lawrence County line.

In the vicinity of Redwood, the chain of lakes, including Clear, Crystal, Mud, and Butterfield Lakes, outlet through Black Creek, which empties into the Indian River waters in Black Lake, in St. Lawrence County. Hyde Lake, in this same group, drains into Perch Lake by Hyde Creek. Millsite, Sixberry, and Moon Lakes, in the same region, have no outlets.

The Oswegatchie River is the only other stream of importance. The village of Oxbow is located within its big oxbow just inside the Jefferson County line. Payne and Sherman Lakes, which are both small, and Vrooman Creek empty into the river at Oxbow.

Water Supply

Jefferson County, except for some isolated areas, has adequate ground water resources. The ground water for individual use is obtained principally from wells drilled in bedrock. Surficial deposits are generally too thin to support a water table. Shallow, dug wells supply some water, but usually run dry when the water table is low. In some instances domestic water supplies are obtained from springs. Several artesian wells in the Watertown area provide an excellent source of high quality drinking water.

The water supply in the county is generally of good quality, but is rated hard. In some areas excessive amounts of iron, sulfur, and salt in the soil affect the quality of the water supply.

Water is scarce mainly in areas where thin clay and silt deposits overlie limestone bedrock. These areas are mainly in the towns of Cape Vincent, Lyme, Brownville, Hounsfield, Henderson, Watertown, South Rutland, and Rutland Center.

Hard, brittle limestone and dolomite, sandstone, and granite are apparently better aquifers. In the northeastern portion of the county, drilling into these water zones is feasible. Buried glacial channels are a possible, local source of ground water.

Five major surface waters are classified as permanent water supplies (*8*). They include the Black River, Lake Ontario, the St. Lawrence River, the Indian River, and Sandy Creek. They can reliably supply water in more than adequate quantities to all parts of the county. Each of these major water supplies can provide good quality water after treatment.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Jefferson County, winters are cold and summers are moderately warm and have occasional hot spells. The Tughill Plateau and other upland areas are markedly cooler than the main agricultural areas in the lowlands. Precipitation is well distributed throughout the year and is nearly always adequate for all crops. Winter snows occur frequently, occasionally as blizzards, and cover the ground much of the time.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Watertown, in the period 1951 to 1979. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 21 degrees F, and the average daily minimum temperature is 12 degrees. The lowest temperature on record, which occurred at Watertown on January 15, 1957, is -32 degrees. In summer the average temperature is 68 degrees, and the average daily maximum temperature is 77 degrees. The highest recorded temperature, which occurred at Watertown on July 19, 1953, is 97 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 40 inches. Of this, 20 inches, or 50 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 18 inches. The heaviest 1-day rainfall during the period of record was 4.65 inches at Watertown on September 26, 1975. Thunderstorms occur on about 29 days each year.

The average seasonal snowfall is 101 inches. The greatest snow depth at any one time during the period of record was 56 inches. On the average of 50 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 65 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 12 miles per hour, in winter.

Farming

About 49 percent of the land area in the county, or 394,000 acres, is in farms, according to the 1974 Census of Agriculture (*16*). Of the land in farms about 45

percent is harvested cropland, 19 percent is all other cropland, 13 percent is woodland including woodland pasture, and 23 percent is all other land in farms. Dairying is the main enterprise. The majority of the crops are produced in support of dairy farms. In addition to these crops, wheat is the only other main crop grown in the county. About 45 percent of the county is forested, according to the New York State Department of Environmental Conservation.

The number of farms in the county have steadily declined during the past 20 years.

In 1969, the Census of Agriculture reported, there were 1,633 farms. By 1979, the number of farms had declined to 1,250. As the number of farms have decreased, the average size of individual farms has increased. In 1969, the average size of a farm was 250 acres, and in 1979 the average size was 275 acres. Of the 1,250 total farms reported in 1979, 850 of these were commercial dairy farms. The rest include about 11 large commercial poultry operations and numerous, part-time beef, dairy replacement, and cash crop farms. The main crops are hay, corn, and small grains. In 1979, hay was grown on 115,621 acres, oats on 17,100 acres, and corn on 38,370 acres, of which 27,354 acres was grown for silage.

History and Development

The first settlement of the region now included in Jefferson County was made in 1797 in what is now Ellisburg Township (*5*). The county was established 8 years later from a part of Oneida County. The early settlers were largely from the older parts of the state, particularly the Mohawk Valley, the New England States, and the eastern part of Pennsylvania. A number of French immigrants, both from Canada and from France, including some refugees, settled north of the Black River. Many of the present inhabitants are descendents of these early pioneers. With the growth of the city of Watertown and the development of the waterways, a considerable number of people from the southern part of Europe have immigrated to the area. In 1840, the population of the county was 60,549 (*11*). In 1980, it was 88,151 (*5*).

Transportation

In large measure, the economic development of Jefferson County is a function of its transportation system (*9*). The county has a well developed network of internal highways, but is relatively isolated from other population centers of New York. Interstate Route 81, which runs through the county from the Canadian border on the north to Oswego County on the south, links the county to the New York State Thruway at Syracuse, to New York Route 17 at Binghamton, and to points in Pennsylvania. New York Route 3, running from the Oswego County line north and east through Watertown, Black River, and Carthage, is the main east-west highway through the Adirondack region to the Lake Champlain Valley. U.S. Route 11 is a major north-south highway through the county. It links Watertown to Syracuse in the south and Potsdam in the north. Most of the villages and hamlets in the county are linked to Watertown or one of the major axis highways by two- or three-lane, paved, all-weather state highways. In addition, Jefferson County owns and maintains approximately 555 miles of highway, and the towns in the county, another 907 miles of highway (*9*).

Jefferson County is served by the Syracuse-to-Massena branch line of Conrail. The line runs through the county from south to north, passing through Mannsville, Adams, Watertown, Philadelphia, and Antwerp. The Carthage branch line connects with Carthage. The railroad in Jefferson County carries only freight; no passenger service is available. The freight handled consists mainly of talc, aluminum products, newsprint, and other paper products.

The public airport in Jefferson County, the Watertown International Airport, is located in the town of Hounsfield.

Since the completion of the St. Lawrence Seaway in 1960, the St. Lawrence River has become a major shipping route. At present, docking facilities for commercial vessels are at Sackets Harbor and Clayton. Part of the Black and Indian Rivers are navigable by pleasure craft, but not by commercial vessels. Water transportation does not run on a regular schedule between Jefferson County and other areas.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers or horizons in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biologic activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind or segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept or model of how the soils were formed. Thus,

during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another resulting in gradual changes in characteristics. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

This soil survey supersedes the soil survey of Jefferson County published in 1911 (*11*). This survey provides additional information and contains larger maps that show the soils in greater detail.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soil on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and

management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation to precisely define and locate the soils is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The general soil map units are described on the following pages. The units are in five groups, depending on the parent material in which the soils formed. The texture given in the descriptive heading of each general soil map unit refers to the subsoil of the major soils in that unit. The drainage given there also refers only to the major soils.

The general soil map of Jefferson County adjoins those of adjacent Lewis and Oswego Counties. The names and boundaries of the joined map units do not match in some areas because of differences in the proportion of major soils in the adjoining survey area. Also, changes have been made in the system of classifying and naming soils. Also, in a few areas, there are differences in the scales used for the maps. However, in all cases, areas in adjacent counties are adjoined by similar kinds of soils. There is no published general soil map for St. Lawrence County, which is adjacent to the north.

Soil Descriptions

Areas dominated by very deep to very shallow soils that formed in glacial till, and rock outcrop; at the higher, cooler elevations

The five general soil map units in this group make up about 19 percent of the county. They are on the Tughill Plateau adjacent to Lewis and Oswego Counties and in the other higher, cooler areas adjacent to Lewis and St. Lawrence Counties. The soils in the units are excessively drained to very poorly drained. In a few areas they are steep and very steep, but most areas are nearly level to strongly sloping. A few of the soils formed in glacial outwash and in lacustrine deposits, but most formed in glacial till.

Most areas of these soils are woodland or are idle. A small acreage is used for farming. In most areas the limitations of the soils to farming are the short growing season, depth to bedrock, rock outcrops, and the seasonal high water table. The main limitations to nonfarm uses are the seasonal high water table, shallow or very shallow depth to bedrock, rock outcrops, and in some soils, the slow or very slow permeability in the subsoil. Some large tracts of these soils are publicly owned. Potential is good for recreation uses, particularly winter sports, and for development of habitat for wildlife.

1. Bice-Ensley-Pinckney

Very deep, well drained to very poorly drained, loamy soils; on uplands

In this map unit the landscape consists of undulating or rolling, upland plains interspersed with steep hills and ridges and nearly level, wet depressions. Slope ranges from 1 to 50 percent, but is mainly 1 to 15 percent.

This map unit makes up about 4 percent of the county. The unit is about 30 percent Bice soils, about 20 percent Ensley soils, about 13 percent Pinckney soils, and about 37 percent soils of minor extent.

Bice soils formed in glacial till derived from gneiss, granite, and in variable proportions, sandstone and shale. They are on hills, ridges, and convex knolls. They are well drained and gently sloping to very steep. The rate of water movement through the soils is moderate or moderately rapid. In some areas large stones and boulders are on the surface.

Ensley soils formed in glacial till. They are in nearly level areas or in depressions. They are poorly drained and very poorly drained. The rate of water movement through the subsoil is moderate. The seasonal high water table is commonly at or just below the surface from November through June. In some areas large stones and boulders are on the surface.

Pinckney soils formed in silt-enriched, surficial deposits 16 to 24 inches thick over underlying glacial till derived from shale and siltstone. They are on hills, ridges, and other convex landforms. They are well drained and

moderately well drained and gently sloping to moderately steep. A dense, compact layer called a fragipan is in the subsoil. The rate of water movement through the soils is moderate above the fragipan, slow or very slow in the fragipan, and moderately slow or slow in the substratum. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from February through May.

The soils of minor extent are Carbondale soils, Saprists, Aquents, and Gulf and Haights soils. Carbondale soils are very poorly drained and in bogs and depressional areas. Saprists and Aquents are very poorly drained and in very low areas or depressions. They are commonly ponded for much of the year. Gulf soils are poorly drained and very poorly drained, and in depressions on terraces and benches. Haights soils are well drained and moderately well drained, and on gravelly fans, benches, and terraces.

Many areas of the soils in this map unit are used for timber production, for recreation, or as habitat for wildlife. In many areas the short growing season and poor drainage limit the use of these soils for farming. Some areas are suited to urban use. The limitations to urban use are prolonged wetness in Ensley soils and, on Pinckney soils, the seasonal high water table and slow rate of water movement through the fragipan.

2. Bice-Haights-Pinckney

Very deep, well drained and moderately well drained, loamy soils; on uplands and in valleys

In this map unit the landscape consists of undulating to rolling plains interspersed with nearly flat benches, hills, and ridges. Slope ranges from 1 to 50 percent, but is mainly 3 to 15 percent.

This map unit makes up about 4.2 percent of the county. The unit is about 31 percent Bice soils, about 17 percent Haights soils, about 12 percent Pinckney soils, and about 40 percent soils of minor extent.

Bice soils formed in glacial till derived from gneiss and granite and, in variable proportions, sandstone and shale. They are on hills, ridges, and other convex landforms. They are well drained and gently sloping to very steep. The rate of water movement through the soils is moderate or moderately rapid. The seasonal high water table is commonly at a depth of more than 6 feet. In some areas large stones and boulders are on the surface.

Haights soils formed in alluvial or outwash deposits that derived mostly from shale and partly from sandstone. They are undulating and rolling and on low-lying knolls and ridges and other convex landforms commonly adjacent to streams. They are well drained and moderately well drained. The rate of water movement through the soils is moderate. The seasonal high water table is commonly within 2 to 3 feet of the surface from February through April.

Pinckney soils formed in silt-enriched, surficial deposits 16 to 24 inches thick over underlying glacial till derived from shale and siltstone. They are on hills, ridges, and other convex landforms. They are well drained and moderately well drained and gently sloping to moderately steep. A dense layer called a fragipan is in the subsoil. The rate of water movement through the soils is moderate above the fragipan, slow or very slow in the fragipan, and moderately slow or slow in the substratum. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from February through May.

The soils of minor extent are Carbondale, Ensley, Danley, Manlius, and Lagross soils. Also included are areas of Saprists and Aquents and areas of Udorthents and Udifluvents in gorges or canyons. Carbondale soils are in bogs and depressional areas on the landscape. Ensley soils are in nearly flat areas. Danley soils are in gently sloping to moderately steep, upland areas. Manlius soils are on hills and ridges underlain with bedrock. Lagross soils are on undulating to rolling benches and terraces and in fan-shaped areas.

Most areas of the soils in this map unit are used for timber production, for recreation, or as habitat for wildlife. The cold climate and the short growing season limit the use of the unit for farming. A few farms are in scattered areas. Some areas are suited to urban use, but few areas have been developed. The limitations to urban use are the seasonal high water table in Haights soils and, on Pinckney soils, the seasonal high water table and slow rate of water movement through the fragipan.

3. Bice-Manlius-Darien

Very deep and moderately deep, excessively drained to somewhat poorly drained, loamy soils; on uplands

In this map unit the landscape consists of nearly level to strongly sloping plains intermingled with some hilly and steep areas. In many areas bedrock is moderately deep. Slope ranges from 1 to 50 percent, but is mainly 1 to 15 percent.

This map unit makes up about 1.6 percent of the county. The unit is about 33 percent Bice soils, about 23 percent Manlius soils, about 15 percent Darien soils, and about 29 percent soils of minor extent.

Bice soils formed in glacial till derived from gneiss, granite, and, in variable proportions, sandstone and shale. They are on hills, ridges, and other convex landforms. They are well drained, moderately coarse textured, and gently sloping to very steep. The rate of water movement through the soils is moderate or moderately rapid. The seasonal high water table is commonly at a depth of more than 6 feet. In some areas large stones and boulders are on the surface.

Manlius soils formed in glacial till and frost-disturbed material derived mainly from shale bedrock. They are on bedrock-influenced plains, hills, and ridges. They are moderately deep, excessively drained and well drained, and medium textured. They are gently sloping to very steep. The seasonal high water table is commonly at a

depth of more than 6 feet. The rate of water movement through the soils is moderate. Bedrock is at a depth of 20 to 40 inches.

Darien soils formed in glacial till derived mainly from dark shale. They are on plains in upland areas. They are somewhat poorly drained and nearly level to gently sloping. The rate of water movement through the soils is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May.

The soils of minor extent are Danley, Allis, Angola, Nassau, and Haights soils. Also included in this unit are areas of Udorthents and Udifluvents in gorges in canyons. Danley soils, which formed in the same kind of material as Darien soils, are on the drier parts of the landscape. Allis and Angola soils are in low areas and along drainageways. Shallow Nassau soils are on ridge crests. Haights soils are on terraces and benches commonly adjacent to streams.

Many areas of the soils in this map unit are wooded and used for timber production and recreation. Some areas are in county and state forest lands. The short growing season limits the use of these soils for farming. A few farms are in scattered areas. On Darien soils, drainage is commonly needed for crop production. Some areas are suited to urban use, but few areas have been developed. The limitations to many urban uses are depth to shale bedrock in Manlius soils and the seasonal high water table and slow rate of water movement through Darien soils.

4. Ruse-Galoo-Insula-Rock Outcrop

Shallow and very shallow, excessively drained to very poorly drained, loamy soils and Rock outcrop; on upland plains

In this map unit the landscape consists of nearly level to gently sloping plains and depressional areas underlain by bedrock at fairly shallow depths. Slope ranges from 1 to 8 percent, but is mainly 1 to 3 percent.

This map unit makes up about 3.9 percent of the county. The unit is about 18 percent Ruse soils, about 16 percent Galoo soils, about 10 percent Insula soils, about 10 percent Rock outcrop, and about 46 percent soils of minor extent.

Ruse soils formed in a thin mantle of glacial till derived from mostly sandstone and some dolomitic limestone. They are on flats and in depressions of smooth plains. These soils are shallow, poorly drained and very poorly drained, and medium textured. They are nearly level. The rate of water movement through the soils is moderate or moderately rapid. The seasonal high water table is commonly at or near the soil surface from November through May. Bedrock is at a depth of 10 to 20 inches.

Galoo soils formed in a thin mantle of glacial till derived mainly from dolomitic limestone and sandstone. They are in smooth, broad areas and in low-lying ridges. They are very shallow, excessively drained and somewhat excessively drained, and medium textured. They are nearly level to gently sloping. The rate of water movement through the soils is moderate. The seasonal high water table is at a depth of more than 6 feet. Bedrock is at a depth of less than 10 inches.

Insula soils formed in a thin mantle of glacial till derived mainly from Potsdam sandstone, gneiss, granite, and schist and in smaller amounts, dolomitic limestone. These nearly level to gently sloping soils are in smooth, broad areas and on low-lying ridges. They are shallow, well drained, and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. Bedrock is at a depth of 10 to 20 inches. The rate of water movement through the soils is moderately rapid.

Rock outcrop commonly consists of flat areas of bedrock exposures and low-lying bedrock ledges. The bedrock is mainly Theresa sandstone and includes some dolomitic rock, granite, gneiss, and schist.

The soils of minor extent are Millsite, Bice, Quetico, Ensley, Dalbo, and Muskellunge soils. Also included are areas of Saprists and Aquents. Millsite and Bice soils are on linear-shaped ridges. Quetico soils are in smooth, broad areas and on low-lying ridges. Ensley soils are in nearly flat areas and depressions. Dalbo soils are on short, convex slopes. Muskellunge soils are in nearly level to concave, sloping areas.

Most areas of the soils in this map unit are in permanent pasture or are idle. The short growing season and shallow or very shallow depth to bedrock limit the use of these soils for farming. Farms are in a few areas. On Ruse soils, drainage is commonly needed in areas used for farming. The limitations of these soils to use as sites for sanitary facilities and to most other urban uses are depth to bedrock, droughtiness, and prolonged wetness of Ruse soils.

5. Millsite-Rock Outcrop-Quetico-Muskellunge

Moderately deep and very shallow, somewhat excessively drained and well drained, loamy soils, very deep, somewhat poorly drained, clayey soils, and Rock outcrop; on lowland plains

In this map unit the landscape consists of nearly level to rolling plains where, in many areas, bedrock is moderately deep to very shallow. Slope ranges from 1 to 50 percent, but is mainly 8 to 15 percent.

This map unit makes up about 5.3 percent of the county. The unit is about 16 percent Millsite soils, about 15 percent Rock outcrop, about 12 percent Quetico soils, about 8 percent Muskellunge soils, and about 49 percent soils of minor extent.

Millsite soils formed in glacial till derived mainly from gneiss, granite, or schist and, in smaller amounts, Grenville marble. These nearly level to very steep soils are on ridges underlain by bedrock. They are moderately deep, well drained and somewhat excessively drained,

and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soils is moderate or moderately rapid.

Rock outcrop consists of nearly flat areas of bedrock exposures and low-lying, bedrock ridges. The bedrock is mainly gneiss, granite, and schist, and some areas are Theresa sandstone, Potsdam sandstone, dolomite, and Grenville marble.

Quetico soils formed in a thin mantle of glacial till derived from residuum of Potsdam sandstone, gneiss, granite, schist, and, in smaller amounts, dolomitic rock. These nearly level and gently sloping soils are in smooth, broad areas and low-lying ridges of bedrock-controlled, glacial till plains. They are very shallow, somewhat excessively drained, and medium textured. The seasonal high water table is at a depth of more than 6 feet. Bedrock is at a depth of less than 10 inches. The rate of water movement through the soils is moderate.

Muskellunge soils formed in glacial lake sediments. These nearly level to strongly sloping soils are on glacial lake plains. They are very deep, somewhat poorly drained, and medium textured. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soils is moderately slow in the surface layer and slow in the subsoil and the substratum.

The soils of minor extent are Heuvelton, Insula, Ruse, Carlisle, and Palms soils. Also included are areas of Saprists and Aquents. Heuvelton soils formed in the same kind of material as Muskellunge soils and are on the drier parts of the landscape. Insula soils are in nearly level and gently sloping areas underlain by bedrock. Ruse soils are in nearly flat areas and in depressions. Carlisle and Palms soils are in organic bogs.

Most areas of the soils in this map unit are in permanent pasture, are reverting to brush, or are idle. Some areas are used for farming. The short growing season and rock outcrops limit the use of these soils for farming. Drainage is commonly needed in farmed areas. Small areas are wooded. A sizeable area is on Fort Drum Military Reservation. Some areas are in urban use. The limitations to use as sites for sanitary facilities and to most other urban uses are very shallow depth to bedrock and droughtiness of Quetico soils and the seasonal high water table and slow rate of water movement of Muskellunge soils.

Areas dominated by very deep to very shallow soils that formed in glacial till, and Rock outcrop; at the lower, warmer elevations

The four general soil map units in this group make up about 16 percent of the county. The soils in the units range from excessively drained to poorly drained and are mostly moderately coarse textured or medium textured. They are mainly nearly level to strongly sloping, but some areas are moderately steep to very steep. Many areas are highly productive farmland. Some areas are in urban use, and other areas are woodland. Extensive areas of soils that are shallow to bedrock are mainly in permanent pasture and in stands of cedar or are idle.

6. Madrid-Galway-Nellis

Very deep and moderately deep, well drained and moderately well drained, loamy soils; on uplands

In this map unit the landscape consists of elongated hills interspersed with nearly level to sloping plains (fig. 2). Slope ranges from 1 to 50 percent, but is mainly 3 to 15 percent.

This map unit makes up about 3.5 percent of the county. The unit is about 40 percent Madrid soils, about 30 percent Galway soils, about 20 percent Nellis soils, and about 10 percent soils of minor extent.

Madrid soils formed in glacial till derived mainly from mixed sandstone, limestone, and granitic rocks. These nearly level to steep soils are on convex hills, ridges, and plains. They are well drained and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate in the surface layer, moderately slow or moderate in the subsoil, and moderately slow in the substratum.

Galway soils formed in a thin mantle of calcareous glacial till over limestone bedrock. These nearly level to strongly sloping soils are on plains. They are well drained and moderately well drained and medium textured. Bedrock is at a depth of 20 to 40 inches. The seasonal high water table is commonly within 1 1/2 to 3 feet of the surface in March and April. The rate of water movement through the soils is moderate. In some areas large stones and a few boulders are on the surface.

Nellis soils formed in calcareous glacial till derived mainly from limestone. These nearly level to very steep soils are mostly on convex knolls, in hilly areas, and on ridges. They are well drained and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate in the subsoil and slow in the substratum.

The soils of minor extent are Bombay, Amenia, Lowville, Farmington, and Newstead soils. Bombay soils formed in the same kind of material as Madrid soils, but are moderately well drained and in nearly level and gently sloping, concave areas. Amenia soils formed in the same kind of material as Nellis soils, but are moderately well drained. Lowville soils are in nearly level to moderately steep areas. Farmington soils are shallow and in undulating, bedrock-controlled areas of till plains. Newstead soils are moderately deep and somewhat poorly drained and poorly drained and in nearly level areas and in depressions.

The major soils in this map unit meet the requirements for prime farmland where slopes are nearly level and

Figure 2.—Drumlins are typical on the Madrid-Galway-Nellis general soil map unit. Galway silt loam, 3 to 8 percent slopes, is in the foreground. Madrid sandy loam, 15 to 25 percent slopes, is on the drumlin in the background.

gently sloping. Most areas have been cleared and are used for dairy farming. Some very stony areas are in pasture. The more steeply sloping areas are woodland, some of which are highly productive woodlots. The more sloping areas and areas of moderately deep Galway soils are limited for use as sites for sanitary facilities and for other urban uses.

7. Massena-Sodus-Ira

Very deep, well drained to poorly drained, loamy soils; on uplands

In this map unit the landscape consists mainly of low, nearly level to sloping areas interspersed with a few hilly areas. Slope ranges from 1 to 25 percent, but is mostly 3 to 8 percent.

This map unit makes up about 1.3 percent of the county. The unit is about 52 percent Massena soils, about 16 percent Sodus soils, about 12 percent Ira soils, and about 20 percent soils of minor extent.

Massena soils formed in calcareous glacial till derived mainly from limestone. These nearly level and gently sloping soils are on flats and in slightly concave areas on plains. They are somewhat poorly drained and poorly drained, and medium textured. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement through the soils is moderate in the surface layer and slow or moderately slow in the subsoil and the

substratum. In some areas large stones and a few boulders are on the surface.

Sodus soils formed in glacial till derived from red sandstone, limestone, and shale but mainly gray sandstone. These gently sloping to moderately steep soils are on the tops and sides of convex hills. They are well drained and medium textured. They have a dense subsoil layer called a fragipan. The seasonal high water table is commonly within 2 to 3 feet of the surface from February through May. The rate of water movement through the soils is moderate above the fragipan and slow in the fragipan and the substratum.

Ira soils formed in the same kind of materials as Sodus soils. These gently sloping and strongly sloping soils are on flats and in concave areas of plains. They are moderately well drained and medium textured. They have a fragipan. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface in February and March. The rate of water movement through the soils is moderate above the fragipan and very slow in the fragipan and the substratum.

The soils of minor extent are Scriba and Sun soils. Also included, along streams, are areas of Fluvaquents and Udifluvents. Scriba and Sun soils formed in the same kind of soil material as Sodus and Ira soils, but are more poorly drained. Scriba soils are on flats and in concave, gently sloping areas. Sun soils are on flats and in depressions.

Some areas of the soils in this map unit are used for dairy farming. Drainage is commonly needed for row crops. Wet areas, very stony areas, and hilly areas are woodland or permanent pasture or are idle. The seasonal high water table limits the use of Massena and Ira soils as sites for sanitary facilities and other kinds of urban development. The dense, fragipan layer limits the use of Sodus and Ira soils as sites for sanitary facilities.

8. Farmington-Galway-Benson

Shallow and moderately deep, excessively drained to moderately well drained, loamy soils; on plains

In this map unit the landscape consists of nearly level to strongly sloping areas interspersed with moderately steep to very steep ridges where bedrock is at a shallow depth. Slope ranges from 1 to 50 percent, but is mainly 1 to 15 percent.

This map unit makes up about 5.6 percent of the county. The unit is about 50 percent Farmington soils, about 25 percent Galway soils, about 15 percent Benson soils, and about 10 percent soils of minor extent.

Farmington soils formed in glacial till or in wind and water deposits mixed with till or congeliturbate. They are nearly level and gently sloping. They are shallow, well drained and somewhat excessively drained, and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. Bedrock is at a depth of 10 to 20 inches. The rate of water movement through the soils is moderate.

Galway soils formed in a relatively thin deposit of calcareous glacial till over limestone. They are nearly level to strongly sloping. They are moderately deep, well drained and moderately well drained, and medium textured. The seasonal high water table is commonly within 1 1/2 to 3 feet of the surface in March and April. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soils is moderate. In some areas large stones and a few boulders are on the surface.

Benson soils formed in glacial till or in wind and water deposits mixed with till or congeliturbate. These nearly level to very steep soils are on smooth to step-like, bedrock-controlled ridges. Bedrock outcrops are prominent in many areas. The soils are shallow, somewhat excessively drained and excessively drained, and medium textured. The seasonal high water table is commonly more than 6 feet. Bedrock is at a depth of 10 to 20 inches. The rate of water movement through the soils is moderate.

The soils of minor extent are Newstead and Galoo soils. Also included are areas of limestone rock outcrop. Moderately deep Newstead soils are similar to Galway soils, but are more poorly drained. They are on flats and in depressions. Very shallow Galoo soils are in flat areas and on ridges.

Some areas of Galway and Farmington soils are used for farming. Most areas are in permanent pasture or stands of white cedar or are idle. In most areas of the soils in this map unit, shallow depth to bedrock and rock outcrop are limitations to use as sites for sanitary facilities and to other urban uses.

9. Benson-Newstead-Galoo-Rock Outcrop

Moderately deep to very shallow, excessively drained to poorly drained, loamy soils and Rock outcrop; on lowland plains and uplands

In this map unit the landscape consists of nearly level to strongly sloping areas underlain by bedrock, and a few moderately steep to very steep escarpments. Slope ranges from 0 to 50 percent, but is mainly 0 to 15 percent.

This map unit makes up about 5.6 percent of the county. The unit is about 30 percent Benson soils, about 26 percent Newstead soils, about 15 percent Galoo soils, about 10 percent Rock outcrop, and about 19 percent soils of minor extent.

Benson soils formed in glacial till or in wind and water deposits mixed with till or congeliturbate. These nearly level to very steep soils are in smooth to step-like, bedrock-controlled areas and on bedrock escarpments. Bedrock is at a depth of 10 to 20 inches. The soils are somewhat excessively drained and excessively drained and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate.

Newstead soils formed in glacial till dominated by limestone rock. These nearly level soils are on flats and in depressions of bedrock-controlled plains. Bedrock is at a depth of 20 to 40 inches. These soils are somewhat poorly drained and poorly drained and medium textured. The seasonal high water table is commonly within 1/2 to 1 foot of the surface from December to May. The rate of water movement through the soils is moderate.

Galoo soils formed in a thin layer of glacial till that overlies limestone or calcareous sandstone. These nearly level to gently sloping soils are in smooth, bedrock-controlled areas that have some escarpments. These soils are excessively drained and somewhat excessively drained and medium textured. Bedrock is less than 10 inches below the soil surface. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate.

Rock outcrop consists mainly of limestone and calcareous sandstone. It is mainly in smooth to step-like areas and on bedrock escarpments. Areas of Rock outcrop are interspersed with the soils in this map unit.

The soils of minor extent are Galway, Farmington, Nellis, Sun, and Teel soils. Galway soils are moderately deep and well drained and moderately well drained. Galway and Farmington soils are interspersed with the major soils. Farmington soils are shallow and well drained and somewhat excessively drained. Deep, well drained Nellis soils are on hills and ridges. Deep, very poorly drained and poorly drained Sun soils are on flats and in depressions. Deep, moderately well drained and somewhat poorly drained Teel soils are on flood plains.

Because of shallow or very shallow depth to bedrock, the seasonal high water table, and rock outcrops, most areas of the soils in this unit are in permanent pasture or stands of white spruce or are idle. Some areas along the Lake Ontario shoreline are in recreation use.

Areas dominated by very deep to very shallow soils that formed in marine and glacial lake deposits, and rock outcrop

The six general soil map units in this group make up about 51 percent of the county. This group is the largest in the county. The units are scattered throughout the lake plain. A few of the soils in these units formed in glacial till, but most formed in marine or glacial lake sediments. The soils range from excessively drained to very poorly drained and are dominantly medium textured to fine textured. Slopes are mainly nearly level to strongly sloping, but a few areas are moderately steep and steep.

Many areas of these soils are highly productive and are used intensively for farming. Drainage is commonly needed if the soils are farmed. Some areas are in urban use. Productive woodlots are scattered throughout most areas. Most of the marginal soil areas are in permanent pasture, are reverting to brush, or are idle. In these areas, the seasonal high water table, shallow or very shallow depth to bedrock, rock outcrop, some surface stones, and a slowly permeable subsoil are the main limitations to most urban uses.

10. Chaumont-Galoo-Wilpoint-Guffin

Moderately deep to very shallow, excessively drained to very poorly drained, clayey or loamy soils; on lowland plains

In this map unit the landscape consists of undulating to depressional plains underlain by bedrock. Slope ranges from 0 to 15 percent, but is dominantly 0 to 8 percent.

This map unit makes up about 20 percent of the county. The unit is about 22 percent Chaumont soils, about 15 percent Galoo soils, about 11 percent Wilpoint soils, about 8 percent Guffin soils, and about 44 percent soils of minor extent.

Chaumont soils formed in a relatively thin mantle of clayey marine sediments that overlie hard bedrock. These nearly level or gently sloping soils are in nearly flat to slightly concave areas. They are somewhat poorly drained and fine textured. Bedrock is at a depth of 20 to 40 inches. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soils is slow or very slow.

Galoo soils formed in a very thin layer of glacial till that overlies limestone or calcareous sandstone bedrock. Bedrock is at a depth of less than 10 inches. These nearly level or gently sloping soils are on smooth landscapes that have some bedrock escarpments and terrace fronts of bedrock. They are excessively drained and somewhat excessively drained and medium textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate.

Wilpoint soils formed in a relatively thin mantle of clayey marine sediments that overlie hard bedrock. These gently sloping soils are in convex areas. They are moderately well drained and fine textured. Bedrock is at a depth of 20 to 40 inches. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from December through May. The rate of water movement through the soils is slow or very slow.

Guffin soils formed in a relatively thin mantle of clayey glacial lake or marine sediments that overlie hard bedrock. These nearly level soils are mostly in depressions. Bedrock is at a depth of 20 to 40 inches. The soils are poorly drained and very poorly drained, and fine textured. The seasonal high water table is commonly within 1/2 foot of the surface from December through May. The rate of water movement through the soils is very slow.

The soils of minor extent are Kingsbury, Vergennes, Rhinebeck, Farmington, and Benson soils. Rhinebeck

and Kingsbury soils, both of which are somewhat poorly drained, and moderately well drained Vergennes soils are similar to Chaumont, Wilpoint, and Guffin soils but are more than 40 inches deep to bedrock. Farmington and Benson soils, both of which are shallow, are similar to Galoo soils but are in areas where the till mantle is slightly deeper.

Most areas of the Chaumont and Wilpoint soils are used to grow crops. Drainage is commonly needed in farmed areas. Some areas are in permanent pasture, stands of white cedar, or are idle. The limitations of the soils in the map unit for most urban uses are the seasonal high water table, very shallow depth to bedrock, and clayey subsoil.

11. Collamer-Galway-Niagara

Very deep and moderately deep, well drained to somewhat poorly drained, loamy soils; on lowland plains

In this map unit the landscape consists of nearly level to strongly sloping plains interspersed with areas of glacial till soils that are underlain at relatively shallow depths by bedrock. Slope is mainly 0 to 15 percent.

This map unit makes up about 6 percent of the county. The unit is about 36 percent Collamer soils, about 34 percent Galway soils, about 20 percent Niagara soils, and about 10 percent soils of minor extent.

Collamer soils formed in silt and clay lacustrine deposits. These gently sloping and sloping soils are on convex ridges and knolls. They are very deep, moderately well drained, and medium textured or moderately fine textured. The seasonal high water table is commonly within a depth of 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soils is moderate in the surface layer and slow or moderately slow in the subsoil and the substratum. In some areas depth to bedrock is between 40 and 72 inches. A few areas of these soils are severely eroded.

Galway soils formed in relatively thin deposits of calcareous glacial till over limestone bedrock. These nearly level to sloping soils are in smooth, nearly flat areas, ridges, and knolls. They are moderately deep, well drained and moderately well drained, and medium textured. Bedrock is at a depth of 20 to 40 inches. The seasonal high water table is commonly within 1 1/2 to 3 feet of the surface in March and April. The rate of water movement through the soils is moderate. In some areas large stones and a few boulders are on the surface.

Niagara soils formed in stratified, silty, calcareous, lake-laid sediments. These nearly level to gently sloping soils are on flats and in concave, sloping areas. They are very deep, somewhat poorly drained, and medium textured or moderately fine textured. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soils is moderate in the surface layer and moderately slow in the subsoil and the substratum.

The soils of minor extent are Canandaigua, Madalin, Lamson, Nellis, Benson, Teel, and Palms soils. Poorly drained and very poorly drained Canandaigua, Madalin, and Lamson soils are in nearly flat areas and in depressions of some areas. Well drained Nellis soils are on the tops and sides of some hills. Somewhat excessively drained and excessively drained Benson soils are on bedrock-controlled ridges and plains. Moderately well drained and somewhat poorly drained Teel soils are on flood plains. Very poorly drained Palms soils are in organic bogs and depressions.

The soils in this map unit are used intensively for cultivated crops. Drainage is commonly needed in areas of Niagara soils that are used for farming. Some areas of the soils in the unit are highly productive woodlots. Other areas are in urban use. The seasonal high water table limits these soils for most urban uses. The slow rate of water movement through Collamer and Niagara soils also limits these soils for most urban uses. Depth to bedrock limits Galway soils for most urban uses.

12. Rhinebeck-Hudson-Rock Outcrop

Very deep, somewhat poorly drained and moderately well drained, clayey soils and Rock outcrop; on lowland plains

In this map unit the landscape consists of nearly level to strongly sloping areas and some moderately steep, dissected areas interspersed with areas of rock outcrops and bedrock ledges. Slope ranges from 0 to 35 percent, but is dominantly 0 to 8 percent.

This map unit makes up about 13 percent of the county. The unit is about 33 percent Rhinebeck soils, about 19 percent Hudson soils, about 9 percent Rock outcrop, and about 39 percent soils of minor extent.

Rhinebeck soils formed in fine textured, glacial lake deposits. These nearly level to strongly sloping soils are on flats and in concave areas of plains. They are somewhat poorly drained. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soils is moderately slow in the surface layer and slow in the subsoil and the substratum.

Hudson soils formed in silt and clay, glacial lake deposits. These gently sloping to moderately steep soils are in short, convex, sloping areas and in some dissected areas. They are moderately well drained. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soils is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum.

Rock outcrop consists mainly of ridges of granite, gneiss, and schist and some sandstone and dolomite.

The soils of minor extent are Chatfield, Hollis, Galoo, Vergennes, Kingsbury, Niagara, Wilpoint, Madalin, and Bonaparte soils. Well drained and somewhat excessively drained Chatfield and Hollis soils and excessively drained and somewhat excessively drained Galoo soils are in areas where bedrock is very shallow to moderately deep. Moderately well drained Vergennes soils and somewhat poorly drained Kingsbury soils are in areas where clay content is very high in the subsoil. Silty Niagara soils and poorly drained and very poorly drained Madalin soils are in a few low-lying areas. Moderately well drained Wilpoint soils are in areas where bedrock is 20 to 40 inches below the surface. Excessively drained Bonaparte soils are in areas where the soils are gravelly, mainly in the towns of Antwerpt and Wilma.

Most areas of the soils in this map unit are in the town adjacent to the St. Lawrence county line and the St. Lawrence River. Many areas of Rhinebeck and Hudson soils are used for hay crops (fig. 3). Drainage is commonly needed on Rhinebeck soils for crop production. In areas of the soils in this unit near the St. Lawrence River, recreation is a major enterprise. Some areas are in urban use, such as sites for cottages and shoreline properties. Other areas are in recreation use, such as several state parks and boat launching sites. Some of the wetter soils and areas of rock outcrop are used as wildlife habitat. The seasonal high water table and rock outcrops limit the soils in the map unit for most urban uses. The slow rate of water movement through the Rhinebeck and Hudson soils also limit these soils for most urban uses.

13. Hudson-Collamer-Rhinebeck

Very deep, moderately well drained and somewhat poorly drained, clayey or loamy soils; on lowland plains

In this map unit the landscape consists of a nearly level to sloping lake plain dissected by moderately steep drainageways. Slope ranges from 0 to 35 percent, but is mainly 0 to 8 percent.

This map unit makes up about 5 percent of the county. The unit is about 23 percent Hudson soils, about 23 percent Collamer soils, about 16 percent Rhinebeck soils, and about 38 percent soils of minor extent.

Hudson soils formed in silt and clay, glacial lake sediments. These gently sloping to moderately steep soils are on short, convex slopes and in moderately steep, dissected areas. They are moderately well drained. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soils is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum.

Collamer soils formed in glacial lake sediments dominated by silt. These gently sloping and strongly sloping soils are on short and medium, convex, sloping areas on lake plain topography. They are moderately well drained, and medium textured or moderately fine textured. The seasonal high water table is commonly within a depth of 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soils is moderate in the surface layer and slow or moderately slow in the subsoil and the substratum.

Rhinebeck soils formed in glacial lake deposits, dominantly clay and silt. These nearly level to strongly sloping soils are in flat areas and in short- and medium-length, concave, sloping areas. They are somewhat poorly drained. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soils is moderately slow in the surface layer and slow in the subsoil and the substratum.

The soils of minor extent are Madalin, Nellis, Amenia, Galway, Elmridge, Deerfield, and Shaker soils. Poorly drained and very poorly drained Madalin soils are in nearly flat areas and in depressions. Deep, well drained Nellis soils and moderately well drained Amenia soils are on glacial till ridges and plains. Well drained and moderately well drained, moderately deep Galway soils are on bedrock-controlled, low-lying ridges and plains. Deep, moderately well drained Elmridge soils and somewhat poorly drained and poorly drained Shaker soils are in areas where loamy deposits overlie clayey deposits. Deep, moderately well drained Deerfield soils are in sandy areas.

The soils in this map unit are intensively used for dairy farming. On Rhinebeck soils, drainage is commonly needed for cultivated crops. Some areas of the soils in the map unit are in urban use. Other areas are highly productive woodlots. The seasonal high water table and the slow rate of water movement through these soils are limitations to most urban uses.

14. Vergennes-Kingsbury-Elmridge

Very deep, moderately well drained and somewhat poorly drained, clayey soils and moderately well drained, loamy soils over clayey sediments; on lowland plains

In this map unit the landscape consists of a nearly level and gently sloping lake plain interspersed with low ridges and dissected by scattered, steep gullies. Slope ranges from 0 to 35 percent, but is dominantly 0 to 8 percent.

This map unit makes up about 5.4 percent of the county. The unit is about 45 percent Vergennes soils, about 30 percent Kingsbury soils, about 14 percent Elmridge soils, and about 11 percent soils of minor extent.

Vergennes soils formed in glacial lake or marine deposits dominated by clay. These gently sloping and strongly sloping soils are mostly on short, convex ridges and knolls and on moderately steep and steep side slopes of dissected areas. They are moderately well drained and fine textured in the subsoil. The seasonal

Figure 3.—The Rhinebeck-Hudson-Rock outcrop general soil map unit near the Thousand Islands Bridge across the St. Lawrence River. In the foreground, Hudson silt loam, 3 to 8 percent slopes, is suitable for hay.

high water table is commonly within 1 to 3 feet of the surface from December through May. The rate of water movement through the soils is slow or very slow in the surface layer and very slow in the subsoil and the substratum.

Kingsbury soils formed in glacial lake or marine deposits dominated by calcareous clay. These nearly level and gently sloping soils are mostly in broad, nearly level areas and in some short, concave, sloping areas. They are somewhat poorly drained and are fine textured in the subsoil. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soils is slow in the surface layer and very slow in the subsoil and the substratum.

Elmridge soils formed in a loamy mantle over clayey lake deposits. These nearly level and gently sloping soils are on mostly linear ridges and in some nearly flat areas on broad plains. They are moderately well drained, and moderately coarse textured in the subsoil and fine

textured in the substratum. The seasonal high water table is commonly within 1 1/2 to 3 feet of the surface from November through April. The rate of water movement through the soils is moderately rapid in the subsoil and slow or very slow in the substratum.

The soils of minor extent are Hudson, Rhinebeck, Shaker, and Niagara soils. Moderately well drained Hudson soils are on short, convex slopes and in some dissected areas where the clay content is lower than that in Vergennes soils. Somewhat poorly drained Niagara and Rhinebeck soils are in nearly flat areas and short to medium-length, concave, sloping areas. Somewhat poorly drained and poorly drained Shaker soils have loamy deposits over clayey sediments. They are in nearly level areas and in depressions.

The soils in this map unit are used mainly as cropland and pasture. Land smoothing and drainage are commonly needed in intensively farmed areas. Some areas are woodland or reverting to brush. The seasonal high water table limits these soils for most urban uses. Slow and very slow rate of water movement through Vergennes and Kingsbury soils and through the substratum of Elmridge soils are limitations to most urban uses.

15. Kingsbury-Covington-Livingston

Very deep, somewhat poorly drained to very poorly drained, clayey soils; on lowland plains

In this map unit the landscape consists mainly of broad, nearly flat areas and depressions and some low-lying, gently sloping areas. Slope ranges from 0 to 6 percent, but is mainly 0 to 3 percent.

This map unit makes up about 1.7 percent of the county. The unit is about 40 percent Kingsbury soils, about 28 percent Covington soils, about 22 percent Livingston soils, and about 10 percent soils of minor extent.

Kingsbury soils formed in clayey, glacial lake or marine deposits. Nearly level and gently sloping Kingsbury soils are mostly in broad, nearly level areas and in some short, concave, sloping areas on lake plains. They are somewhat poorly drained, and fine textured in the subsoil. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soils is slow in the surface layer and very slow in the subsoil and the substratum.

Covington soils formed in glacial lake or marine deposits. These nearly level soils are in flat areas and depressions of lake plains. They are poorly drained and fine textured. The seasonal high water table is commonly within 1/2 to 1 foot of the surface from October through May. The rate of water movement through the soils is slow or very slow in the surface layer and very slow in the subsoil and the substratum.

Livingston soils formed in glacial lake or marine deposits that are high in clay content. These soils are in broad, flat areas and depressions of lake plains. They are very poorly drained, and fine textured in the subsoil. The surface layer is generally mucky. The seasonal high water table is commonly at or within 1 foot of the surface from January through July. The rate of water movement through the soils is moderately slow in the surface layer and slow or very slow in the subsoil.

The soils of minor extent are Vergennes, Rhinebeck, and Willette soils. Moderately well drained Vergennes soils are in short, convex, sloping areas and at the sides of dissected areas. Somewhat poorly drained Rhinebeck soils are mainly in short, concave, sloping areas where clay content is less than 60 percent in the subsoil. Very poorly drained Willette soils are in organic bogs and depressions.

Most of the soils in this map unit are in wildlife management areas. A few areas are used for cultivated crops and pasture. Land smoothing and drainage are needed for intensive farming (fig. 4). Other areas are woodland or reverting to brush. Prolonged wetness is a serious problem for most urban uses. Potential is very good for development of habitat for wetland wildlife.

Areas dominated by deep soils that formed in glacial outwash and in deltaic and alluvial deposits

The three general soil map units in this group are on terraces, remnant beach ridges, outwash plains, deltas, alluvial fans, and flood plains. They make up about 10 percent of the county. The units are mostly in the southwestern part of the county, adjacent to Sandy Creek and in the Black River Valley. The soils in the units dominantly range from excessively drained to somewhat poorly drained. Slope is mainly nearly level to strongly sloping or rolling. A few areas are steep to very steep or hilly.

Most areas of Alton, Blasdell, Groton, Phelps, and Teel soils are used for cultivated crops. Some areas are mined in commercial gravel operations. Some areas of Plainfield and Windsor soils are in commercial or residential use. Large areas of Plainfield, Windsor, and Deerfield soils are on federal and state lands, and are largely wooded or have been reforested with conifers. A few areas of the soils in the map unit are used for cultivated crops and pasture. The sandy texture of Plainfield and Windsor soils, the seasonal high water table on Deerfield soils, and flooding and the seasonal high water table on Teel soils are limitations to most urban uses.

16. Groton-Windsor-Alton

Very deep, excessively drained to well drained, loamy or sandy soils; on ridges, terraces, and plains

In this map unit the landscape is mainly nearly level to gently sloping. Some strongly sloping to steep areas are on ridge sides and terrace fronts. Slope ranges from 0 to

Figure 4.—Typical landscape of nearly level lowlands on the Kingsbury-Covington-Livingston general soil map unit. In early spring ponding is common on Livingston mucky silty clay. In late spring drained areas of this soil are tilled for crop production.

50 percent in some places, but it is mainly 0 to 8 percent.

This map unit makes up about 2.6 percent of the county. The unit is about 28 percent Groton soils, about 14 percent Windsor soils, about 13 percent Alton soils, and about 45 percent soils of minor extent.

Groton soils formed in gravelly, glacial outwash deposits. These nearly level to very steep soils are on terraces and remnant lake beaches (fig. 5). They are excessively drained and coarse textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderate or moderately rapid in the surface layer and the subsoil and very rapid in the substratum.

Windsor soils formed in glacial outwash deposits of loamy sand and sand. These nearly level to moderately steep soils are on terraces, deltas, and sand plains. They are excessively drained. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is rapid or very rapid.

Alton soils formed in gravelly and sandy glacial outwash and beach deposits. These nearly level to steep soils are on remnant beaches, kames, and terraces. They are well drained and somewhat excessively drained. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderately rapid in the surface layer and the subsoil and rapid or very rapid in the substratum.

The soils of minor extent are Phelps, Wareham, Scarboro, Lamson, Arkport, Galen, Niagara, Minoa, and Junius soils. Moderately well drained Phelps soils are on terraces and alluvial fans. Somewhat poorly drained and poorly drained Wareham soils are in low-lying, nearly flat areas of sand plains. Very poorly drained Scarboro soils and poorly drained and very poorly drained Lamson soils are in depressions. Also included, in some areas, are loamy, well drained Arkport soils, moderately well drained Galen soils, and somewhat poorly drained Minoa soils. Somewhat poorly drained Niagara soils are in nearly level and gently sloping areas where the silt content is high. In some areas poorly drained and somewhat poorly drained Junius soils are in drainageways.

Many areas of Groton and Alton soils are in farms. Some areas of these soils are in commercial gravel operations. Many areas of Windsor soils are in commercial or residential use. On Windsor soils, sandy

Figure 5.—Typical area of the Groton-Windsor-Alton general soil map unit. Groton gravelly loam, 3 to 8 percent slopes, is on a remnant beach ridge in the foreground. This soil is suitable for cultivated crops, such as corn.

and droughty conditions are limitations to use for farming. Many cleared areas have been reforested to conifers. Because of the rapid rate of water movement through the soils in this unit, the soils do not adequately filter effluent in septic disposal systems. Consequently, ground water contamination is a hazard. There are few limitations to use of these soils for other kinds of urban development.

17. Plainfield-Windsor-Deerfield

Very deep, excessively drained to moderately well drained, sandy soils; on terraces and plains

In this map unit the landscape is nearly level to sloping, interspersed with some rolling to hilly areas. Slope ranges from 0 to 25 percent in places, but it is mainly 0 to 15 percent.

This map unit makes up about 6.7 percent of the county. The unit is about 25 percent Plainfield soils, about 18 percent Windsor soils, about 17 percent Deerfield soils, and about 40 percent soils of minor extent.

Plainfield soils formed in thick deposits of sand. These nearly level to hilly soils are on terraces and outwash plains. They are excessively drained. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is rapid.

Windsor soils formed in deposits of loamy sand and sand. These nearly level to hilly soils are on terraces, deltas, and sand plains. They are excessively drained. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is rapid or very rapid.

Deerfield soils formed in thick deposits of sand and loamy sand. These nearly level to gently sloping soils are on low terraces, deltas, and outwash plains. They are moderately well drained. The seasonal high water table is commonly within a depth of 1 1/2 to 3 feet of the surface from December through April. The rate of water movement through the soils is rapid in the surface layer and the subsoil and rapid or very rapid in the substratum.

The soils of minor extent are Wareham, Scarboro, Minor, Lamson, Palms, Carlisle, Boneparte, Agawam, and Williamson soils. Somewhat poorly drained and poorly drained Wareham soils are in low-lying nearly flat areas of sand plains. Very poorly drained Scarboro soils and poorly drained and very poorly drained Lamson soils are in depressions. Somewhat poorly drained Minoa soils are in low-lying areas that are loamy. Very poorly drained Palms and Carlisle soils are in bogs and depressions that contain organic deposits. Excessively drained Boneparte soils are on knolls and ridges. Well drained, loamy Agawam soils are on high, stream terraces and outwash plains. Moderately well drained Williamson soils are on plains that are silty.

Most of the soils in this map unit are on federal and state lands. The federal land comprises Fort Drum Military Reservation. The state land comprises Wescott Beach State Park and forest land near the town of Theresa. Sandy texture and droughty conditions limit the use of these soils for farming. Many cleared areas have been reforested to conifers. Sandy texture, droughtiness, rapid rate of water movement through these soils and, in addition, the seasonal high water table on Deerfield soils are the major limitations for many urban uses.

18. Blasdell-Teel-Phelps

Very deep, well drained to somewhat poorly drained, loamy soils; on terraces and flood plains

In this map unit the landscape consists mostly of broad, nearly flat areas adjacent to streams and some adjacent, gently sloping and sloping areas. Slope ranges from 0 to 15 percent in some places, but it is mostly 0 to 3 percent.

This map unit makes up about 0.9 percent of the county. The unit is about 45 percent Blasdell soils, about 23 percent Teel soils, about 22 percent Phelps soils, and about 10 percent soils of minor extent.

Blasdell soils formed in water-sorted, shaly deposits. These nearly level to strongly sloping soils are on outwash terraces and alluvial fans. They are well drained. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderately rapid.

Teel soils formed in postglacial alluvium. These nearly level soils are on flood plains. They are moderately well drained and somewhat poorly drained, and medium textured. The seasonal high water table is commonly within 1/2 to 2 feet of the surface from January through May. The rate of water movement through the soils is moderate.

Phelps soils formed in loamy material overlying sand and gravel. These nearly level and gently sloping soils are on terraces and alluvial fans. They are moderately well drained. The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soils is moderate in the surface layer and the subsoil and moderately rapid or rapid in the substratum.

The soils of minor extent are Canandaigua and Hamlin soils. Also included, on steep slopes adjacent to streams, are areas of Udorthents. Also included, adjacent to many streams, are areas of Fluvaquents and Udifluvents. Poorly drained and very poorly drained Canandaigua soils are in nearly flat areas and depressions. Well drained Hamlin soils are on flood plains.

The soils in this map unit are intensively used for dairy farming. Some drainage is commonly needed in areas of Phelps soils used for farming. Streambanks need protection in some areas of Teel soils. A few areas of the soils in the map unit are used for pasture and woodland. Blasdell soils are suitable for most urban uses. On sites for sewage lagoons and sanitary landfills, seepage can result in ground water contamination. The seasonal high water table on Phelps soils and the seasonal high water table and occasional flooding on Teel soils are limitations for most urban uses.

Areas dominated by very deep soils that formed mainly in organic deposits

The two general soil map units in this group are in low-lying areas or depressions on lake plains and outwash plains. They make up about 4 percent of the county. Two areas of this group of soils are in the Lakeview Wildlife Management Area, on the shores of Lake Ontario, and in the Perch River State Game Management Area in the Perch River Watershed. The soils in the units are dominantly organic. They are very poorly drained, but range to excessively drained in some areas where mineral soils are a component. In most areas they are wet or ponded most of the year. Slope is mostly level, but a few areas are gently sloping to steep. Most areas are woodland or open marshes and are state owned. A few privately owned areas are used for crops. In most areas potential is good for development of habitat for wildlife.

19. Saprists-Aquents-Groton-Minoa

Very deep, very poorly drained, organic soils and very poorly drained, somewhat poorly drained, and excessively drained, sandy or loamy soils; on lowland plains

In this map unit the landscape consists mainly of bogs and marshes surrounded by higher terraces and ridges.

Slope ranges from 0 to 50 percent in a few areas, but is mainly 1 or 0 percent.

This map unit makes up about 1.7 percent of the county. The unit is about 38 percent Saprists, about 19 percent Aquents, about 18 percent Groton soils, about 15 percent Minoa soils, and about 10 percent soils of minor extent.

Saprists formed in black, well decomposed, herbaceous and woody plant remnants. Aquents formed in thick deposits of mineral materials enriched with organic matter. Both Saprists and Aquents are level and are in low-lying areas and depressions adjacent to lakes, ponds, streams, and drainageways. They are very poorly drained. They are ponded with shallow water much of the year, and are commonly called freshwater marsh. The rate of water movement through the soils differs greatly from place to place.

Groton soils formed in glacial outwash deposits. These nearly level to very steep soils are on terraces, terrace fronts, and the tops and sides of remnant beach ridges. They are excessively drained and sandy textured. The seasonal high water table is commonly at a depth of more than 6 feet. The rate of water movement through the soils is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum.

Minoa soils formed in water-sorted sediments dominated by very fine sands. These nearly level soils are in low-lying areas at the fringe of deltas and on the flats of remnant, glacial streambeds. They are somewhat poorly drained. The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement through the soils is moderate in the surface layer and the subsoil and moderate or moderately rapid in the substratum.

The soils of minor extent are Lamson, Teel, and Galen soils. Lamson, Galen, and Minoa soils formed in similar material. Poorly drained and very poorly drained Lamson soils are in flat areas and in depressions. Moderately well drained Galen soils are in nearly level and gently sloping areas. Teel soils are on flood plains adjacent to major streams. Beaches are included in a few areas on the shores of Lake Ontario.

Most areas of the soils in the map unit are wet, wooded areas or open marshes, and are state or public owned. Areas are mainly developed habitat for wetland wildlife. The few privately owned areas are woodland, idle, or in small farms. Potential is good for further development of wildlife habitat.

20. Carlisle-Palms-Willette

Very deep, very poorly drained, organic soils; in lowland bogs and depressions

In this map unit the landscape consists of bogs and wet, depressional areas. The soils formed in organic deposits. Slope is 1 or 0 percent.

This map unit makes up about 2.0 percent of the county. The unit is about 32 percent Carlisle soils, about 30 percent Palms soils, about 12 percent Willette soils, and about 26 percent soils of minor extent.

The soils in this map unit are very poorly drained and mucky. These level soils are in bogs and wet depressions. From September through June they are subject to frequent ponding for long durations or the seasonal high water table is commonly within 1 foot of the surface. Carlisle soils are more than 51 inches deep to loamy soil material. The rate of water movement through Carlisle soils is moderate or moderately rapid. Palms soils are 16 to 51 inches deep over loamy soil material. The rate of water movement through Palms soils is moderate or moderately rapid in the organic layers and moderately slow or moderate in the mineral soil substratum. Willette soils are 16 to 51 inches deep over clayey soil material. The rate of water movement through Willette soils is moderately slow to moderately rapid in the organic layers and slow in the clayey substratum.

The soils of minor extent are Boots, Shaker, Deerfield, Wareham, Scarboro, and Livingston soils. Also included are areas of Saprists, Aquents, Fluvaquents, and Udifluvents. Boots soils overlie marl, and are in some bogs and wet depressions. Shaker soils are loamy and 20 to 40 inches thick over clayey deposits. Clayey Livingston soils are in nearly flat areas and in depressions. Deerfield, Wareham, and Scarboro soils are in areas of sandy deposits. Deerfield and Wareham soils are in gently sloping to nearly flat areas. Scarboro soils are in depressions. Saprist and Aquents are subject to ponding most of the year. Fluvaquents and Udifluvents are adjacent to streams and are subject to frequent flooding.

Most areas of the soils in this map unit are wooded or in marsh vegetation. Only one area, near Hyde Lake, has been cleared and is used for cultivated crops. Drainage is needed if these soils are farmed. Potential is good for development of habitat for wetland wildlife.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Collamer silt loam, 3 to 8 percent slopes, is one of several phases in the Collamer series.

Some map units are made up of two or more major soils. These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Galoo-Rock outcrop complex, 0 to 8 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in the mapped areas are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Plainfield and Windsor soils, hilly, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Beaches is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Soil Descriptions

AgA—Agawam fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, well drained soil mainly in smooth areas on the tops of terraces and on plains. Areas range from 15 to 65 acres.

Typically, the surface layer is brown fine sandy loam about 10 inches thick. The subsoil is yellowish brown fine sandy loam about 20 inches thick. The substratum is brown, loose loamy fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils on knolls and mounds and moderately well drained Deerfield soils in undulating areas. Also included, in some places, are areas that have short, steep slopes.

The rate of water movement through this Agawam soil is moderately rapid in the surface layer and the upper part of the subsoil, moderately rapid or rapid in the lower part of the subsoil, and rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops. A few areas are used as pasture or woodland. Some areas are in urban use.

This soil is very well suited to cultivated crops. If the soil is managed properly, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizer.

Potential productivity of this soil for sugar maple is moderate. There are few or no woodland management concerns.

Seepage, the sandy texture, and the rapid rate of water movement through this soil are limitations on sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations because cutbanks cave. Potential for habitat for openland and woodland wildlife is good.

The capability class is I.

AgB—Agawam fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly in oblong or narrow, convex areas on the tops of high terraces and on plains. Areas range from 15 to 65 acres.

Typically, the surface layer is brown, fine sandy loam about 10 inches thick. The subsoil is yellowish brown, fine sandy loam about 20 inches thick. The substratum is brown, loose loamy fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils on ridges and mounds and moderately well drained Deerfield soils in low, concave areas. Also included are short, steep slopes.

The rate of water movement through this Agawam soil is moderately rapid in the surface layer and the upper part of the subsoil, moderately rapid or rapid in the lower part of the subsoil, and rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops. A few areas are used as pasture or woodland. Some areas are in urban use.

This soil is well suited to cultivated crops. If the soil is managed properly, row crops can be grown intensively. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no woodland management concerns.

There are few limitations for most kinds of community development. However, seepage, the sandy texture, and the rapid rate of water movement through this soil are limitations on sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a serious problem for shallow excavations because cutbanks cave. Slope is a limitation on sites for small commercial buildings. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

AhA—Allis silt loam, 0 to 3 percent slopes. This is a nearly level, moderately deep, and poorly drained and somewhat poorly drained soil mainly in smooth, oblong areas in flats and shallow depressions on uplands. Areas range from 10 to 80 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 20 inches thick. It is grayish brown silty clay loam in the upper part and gray to dark gray shaly silty clay in the lower part. Soft, dark, shale bedrock is at a depth of 28 inches. It is fractured and very strongly acid.

Included with this soil in mapping are small areas of moderately deep, well drained to excessively drained Manlius soils on ridges and knolls and somewhat poorly drained Angola soils on flats and in gently sloping areas. Also included are small areas of shallow, somewhat excessively drained Nassau soils on low-lying ridges. Also included are short, steep slopes, rock outcrop, and bedrock escarpments.

The seasonal high water table in this Allis soil is commonly within 1 foot of the surface between November and June. Shale bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil. Runoff is very slow. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is extremely acid to moderately acid.

Most areas of this soil are woodland or reverting to brush. Some areas are in pasture or idle.

This soil is poorly suited to cultivated crops because of the seasonal high water table. Drainage is needed if the

soil is used for cultivated crops. Most areas are better suited to long-term hay. In drained and cropped areas, conservation tillage is a suitable management practice. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizer.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes a high rate of seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, depth to bedrock, the slow or very slow rate of water movement through this soil, and the clayey texture in the subsoil are limitations on sites for sanitary facilities and for other urban uses. Potential for habitat for wetland wildlife is fair.

The capability subclass is IVw.

AhB—Allis silt loam, 3 to 8 percent slopes. This is a gently sloping, moderately deep, poorly drained and somewhat poorly drained soil mainly in long, narrow, concave, sloping areas on uplands. Areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 20 inches thick. It is grayish brown silty clay loam in the upper part and gray to dark gray shaly silty clay in the lower part. Soft, dark, shale bedrock is at a depth of 28 inches. It is fractured and very strongly acid.

Included with this soil in mapping are small areas of moderately deep, well drained Manlius soils on top of hills and knolls and somewhat poorly drained Angola soils in flats and gently sloping areas. Also included are small areas of shallow, somewhat excessively drained Nassau soils on low-lying ridges. Also included are short, steep slopes, rock outcrops, and bedrock escarpments.

The seasonal high water table in this Allis soil is commonly within 1 foot of the surface between November and June. Shale bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is extremely acid to moderately acid.

Most areas of this soil are woodland or reverting to brush. Some areas are in pasture or idle.

This soil is poorly suited to cultivated crops because of the seasonal high water table. Drainage is needed if the soil is used for cultivated crops. Most areas are better suited to long-term hay. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage is a suitable management practice in drained areas. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion and to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table restricts equipment use, causes a high rate of seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, depth to bedrock, the slow or very slow rate of water movement through this soil, and the clayey texture in the subsoil are limitations of this soil on sites for sanitary facilities and for other urban uses. Potential for habitat for wetland wildlife is fair.

The capability subclass is IVw.

AlA—Alton gravelly loam, 0 to 3 percent slopes. This is a nearly level, very deep, and well drained and somewhat excessively drained soil mainly in oval areas on remanent beaches and in long, narrow areas on terraces. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil is about 27 inches thick. It is strong brown very gravelly coarse sandy loam in the upper part and yellowish brown very gravelly coarse sandy loam in the lower part. The substratum is brown very gravelly coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils and moderately well drained Deerfield soils where the soil deposits are sandy. Also included are small areas of moderately well drained Phelps soils in low-lying areas. Also included are small areas where cobbles are on the surface. Small gravel pits and stony areas are shown on the soil map by conventional symbols.

The rate of water movement through this Alton soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to neutral.

Most areas of this prime farmland soil are cleared and used for cultivated crops for dairy farming. A few areas are in pasture, woodland, and in urban use. A few included areas are used in commercial gravel operations.

This soil is well suited to cultivated crops. If the soil is properly managed, row crops can be grown continuously. In most years the soil is slightly droughty during the growing season. Rock fragments can interfere with some

tillage operations. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizer.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

Seepage and the rapid or very rapid rate of water movement through the substratum are limitations of this soil on sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations because cutbanks cave. Potential frost action is a limitation for local roads and streets. Small stones are a limitation for lawns and landscaping.

There are few or no limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIs.

AlB—Alton gravelly loam, 3 to 8 percent slopes. This is a gently sloping, very deep, and well drained and somewhat excessively drained soil mainly in short, convex, sloping areas or on remanent beaches or terraces. Areas range from 10 to 20 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil is about 27 inches thick. It is strong brown very gravelly coarse sandy loam in the upper part and yellowish brown very gravelly coarse sandy loam in the lower part. The substratum is brown very gravelly coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils and moderately well drained Deerfield soils where the soil deposits are sandy. Also included are small areas of moderately well drained Phelps soils in low-lying areas. Also included are small areas where cobbles are on the surface. Also included are small gravel pits and stony areas.

The rate of water movement through this Alton soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. A few areas are pasture, woodland, or in urban use. A few included areas are used in commercial gravel operations.

This soil is well suited to cultivated crops. If the soil is properly managed, row crops can be grown continuously. In most years the soil is slightly droughty during the growing season. Rock fragments can interfere with some tillage operations. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

Seepage and the rapid or very rapid rate of water movement through the substratum are limitations of this soil on sites for sanitary facilities. Seepage and inadequate filtration of effluent can result in ground water contamination. Cutbanks caving is a limitation for shallow excavations. Potential frost action is a limitation for local roads and streets. Small stones are a serious limitation for lawns and landscaping.

There are few or no limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIs.

AlC—Alton gravelly loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained and somewhat excessively drained soil mainly in short, convex, sloping areas on the flanks of hills, ridges, and terraces. Areas range from 5 to 60 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil is about 27 inches thick. It is strong brown very gravelly coarse sandy loam in the upper part and yellowish brown very gravelly coarse sandy loam in the lower part. The substratum is brown very gravelly coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils and moderately well drained Deerfield soils where the soil deposits are sandy. Also included, in small, low-lying areas, are moderately well drained Phelps soils. Also included are small areas where cobbles are on the surface. Small gravel pits and stony areas are shown on the soil map by conventional symbols.

The rate of water movement through this Alton soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. A few areas are pasture, woodland, or in urban use. A few included areas are used in commercial gravel operations.

This soil is suited to cultivated crops. It is slightly droughty. Erosion is a moderate hazard if slopes are left bare of vegetation. Rock fragments interfere with some tillage operations. Conservation tillage, contour tillage, crop rotations with longer periods of sod crops, winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are no major management limitations for woodland uses.

Seepage, slope, and the rapid or very rapid rate of water movement through the substratum are limitations of this soil on sites for sanitary facilities. Seepage and inadequate filtration of effluent can result in ground water contamination. Cutbanks caving are a limitation for shallow excavations. Slope is a limitation on sites for small commercial buildings. Small stones are a limitation for lawns and landscaping. Slope and potential frost action are limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIIe.

AlD—Alton gravelly loam, 15 to 25 percent slopes. This is a moderately steep, very deep, and well drained and somewhat excessively drained soil mainly on the sides of hills, ridges, and terraces. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil, to a depth of 33 inches, is very gravelly coarse sandy loam. It is strong brown in the upper part and yellowish brown in the lower part. The substratum is brown very gravelly coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained, sandy Windsor soils on knolls and areas of well drained, shaly Blasdell soils on stream terraces. Also included are small areas where cobbles are in the surface layer. Also included are gravel pits and stony areas.

The rate of water movement through this Alton soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for pasture. Some areas are woodland. A few areas are idle. Some previously pastured or idle areas have been planted to conifers. A few areas are used in commercial gravel pit operations.

This soil is poorly suited to cultivated crops because of moderately steep slope. It is somewhat droughty during the growing season. Erosion is a serious limitation if slopes are bare of vegetation. Rock fragments interfere with tillage. A carefully planned crop rotation with long-term sod crops is needed to control erosion. Conservation tillage, contour farming, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Slope somewhat limits equipment use.

Seepage, moderately steep slope, and rapid or very rapid rate of water movement through the substratum are limitations of this soil on sites for sanitary facilities. Small stones are a limitation for lawns and landscaping. Slope is a limitation for most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IVe.

AlE—Alton gravelly loam, 25 to 45 percent slopes. This is a steep and very steep, very deep, and well drained and somewhat excessively drained soil mainly on the sides of hills and ridges and on the face of terraces. Areas range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil, to a depth of 33 inches, is very gravelly coarse sandy loam. It is strong brown in the upper part and yellowish brown in the lower part. The substratum is brown very gravelly coarse sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained, sandy Windsor soils and well drained, shaly Blasdell soils. Also included are small areas where cobbles are on the surface layer. Also included are small gravel pits and stony areas.

The rate of water movement through this Alton soil is moderately rapid in the subsoil and rapid or very rapid in the substratum. Runoff is rapid. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to neutral.

Most areas of this soil are woodland. A few areas are in pasture or idle. Some previously pastured or idle areas are planted to conifers. A few areas are used in commercial gravel pit operations.

This soil is not suited to cultivated crops because of steep and very steep slopes. It is somewhat droughty during the growing season. Rock fragments interfere with tillage. Erosion is a limitation if slopes are bare of vegetation. The soil is generally best used as woodland.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. Reseeding and renovating can be difficult because of slope. All these practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Slope somewhat limits equipment use.

Seepage, slope, and rate of water movement through the substratum are limitations of this soil as sites for sanitary facilities. Small stones are a limitation for lawns and landscaping. Slope is a limitation for most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is VIIe.

AmA—Amenia loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in smooth, nearly flat, broad expanses of uplands and in smaller areas on lowland plains. Areas range from 4 to 20 acres.

Typically, the surface layer is very dark grayish brown loam about 9 inches thick. The subsoil is mottled and about 10 inches thick. It is dark yellowish brown loam. The substratum is mottled and extends to a depth of 60 inches or more. It is brown to grayish brown gravelly fine sandy loam.

Included with this soil in mapping are small areas of deep, well drained Nellis and Lowville soils in more sloping areas. Somewhat poorly drained Massena soils are in nearly level areas and in slight depressions. Also included are small areas of well drained and moderately well drained Galway soils on uplands where bedrock is 20 to 40 inches below the surface. Also included in the Dry Hill area south of Watertown are small, common areas that have a very gravelly or very flaggy surface layer. Also included are small areas of rock outcrops and wet spots.

The seasonal high water table in this Amenia soil is commonly within 18 to 30 inches of the surface from November through May. The rate of water movement through the soil is moderate in the surface layer and the subsoil and slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to mildly alkaline.

Most areas of this prime farmland soil have been cleared and are used for crops for dairy farming. Some areas are in pasture and are woodland. A few areas are in urban use.

This soil is well suited to cultivated crops. If it is managed properly, row crops can be grown intensively. The seasonal high water table somewhat delays both planting and harvesting crops. Random drainage of wet spots is commonly needed if the soil is farmed. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

The seasonal high water table, rate of water movement through the substratum, and potential frost action are limitations of this soil for many urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

AmB—Amenia loam, 3 to 8 percent slopes. This is a gently sloping, deep, moderately well drained soil mainly in short and medium-length, concave, sloping areas on plains. Areas range from 4 to 20 acres.

Typically, the surface layer is very dark grayish brown loam about 9 inches thick. The subsoil is mottled and about 10 inches thick. It is dark yellowish brown loam. The substratum is mottled and extends to a depth of 60 inches or more. It is brown to grayish brown gravelly fine sandy loam.

Included with this soil in mapping are small areas of very deep, well drained Nellis and Lowville soils in convex, sloping areas. Somewhat poorly drained Massena soils are in nearly level areas and in slight depressions. Also included, where bedrock is 20 to 40 inches below the surface, are small areas of well drained and moderately well drained Galway soils. Also included, in the Dry Hill area south of Watertown, are common, small areas that have a very gravelly or very flaggy surface layer. Also included are small areas of rock outcrops and wet spots.

The seasonal high water table is commonly within 18 to 30 inches of the surface from November through June. The rate of water movement through the soil is moderate in the surface layer and the subsoil and slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. In unlimed areas the surface layer is moderately acid to mildly alkaline.

Most areas of this prime farmland soil have been cleared and are used for crops for dairy farming. Some areas are used as pasture and woodland. A few areas are in urban use.

This soil is well suited to most cultivated crops. Erosion is a slight hazard if the soil is bare of vegetation. The seasonal high water table somewhat delays both planting and harvesting crops. Random drainage of wet spots is commonly needed if the soil is farmed.

Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

The seasonal high water table, rate of water movement through the substratum, and potential frost action are limitations of this soil for most urban uses. The limitations to use of the soil for lawns and landscaping and as sites for sewage lagoons, area sanitary landfills, dwellings without basements, and small commercial buildings are the seasonal high water table, slope, or seepage.

The capability subclass is IIe.

AnA—Angola silt loam, 0 to 3 percent slopes. This is a nearly level, moderately deep and somewhat poorly drained soil mainly in smooth, oblong areas on uplands. Areas range from 3 to 20 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 12 inches thick. It is dark gray silty clay loam. Soft, fractured, black shale bedrock is at a depth of 24 inches.

Included with this soil in mapping are small areas of moderately deep, well drained to excessively drained Manlius soils on knolls and moderately deep, poorly drained and somewhat poorly drained Allis soils in depressions. Also included are small areas of very deep, well drained and moderately drained Pinckney soils on convex ridges.

The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. Shale bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of this soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil are used as pasture or woodland. Some areas are reverting to brush or are idle. Some areas have been cleared and are planted to conifers. A few areas are used for cultivated crops. This is a prime farmland soil, where drained.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. Drainage is commonly needed if the soil is used for cultivated crops. In some areas drainage is difficult to install because of depth to bedrock. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and applications of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use and causes moderate seeding mortality.

Depth to bedrock, the seasonal high water table, and rate of water movement through this soil are limitations to use as sites for sanitary facilities. The seasonal high water table and potential frost action are limitations to most other urban uses. The potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIw.

AnB—Angola silt loam, 3 to 8 percent slopes. This is a gently sloping, moderately deep, somewhat poorly drained soil mainly in short, concave, sloping areas on uplands. Areas range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 12 inches thick. It is dark gray silty clay loam. Soft, dark, fractured shale bedrock is at a depth of 24 inches or more.

Included with this soil in mapping are small areas of moderately deep, well drained and excessively drained Manlius soils on knolls and moderately deep, poorly drained and somewhat poorly drained Allis soils in nearly flat areas. Also included are small areas of very deep, well drained and moderately well drained Pinckney soils.

The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May. Shale bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate in the surface layer and slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil are used as pasture or woodland. Some areas are reverting to brush or are idle. Some areas have been cleared and are planted to conifers. A few areas are in cultivated crops.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. Drainage is commonly needed if the soil is used for cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain

soil tilth and the content of organic matter, to conserve moisture needed for plant growth, and to control erosion.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use and causes moderate seedling mortality.

Depth to bedrock, the seasonal high water table, and rate of water movement through the soil are limitations to use as sites for sanitary facilities. The seasonal high water table and potential frost action are limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIw.

ArB—Arkport fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly in short, convex, sloping areas. Areas range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 7 inches thick. The subsoil is 51 inches thick. It is brown to light yellowish brown very fine sandy loam in the upper part. It is pale brown loamy fine sand that has bands of dark brown very fine sandy loam in the lower part. The substratum is light brownish gray fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Galen soils and somewhat poorly drained Minoa soils in low-lying areas. Also included, where the soils contain gravel, are small areas of moderately well drained Phelps soils. Also included, in a few places, are areas of nearly level Arkport soils.

The rate of water movement through this Arkport soil is moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use.

This soil is well suited to cultivated crops. If the soil is properly managed, row crops can be grown almost continuously. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, returning crop residue to the soil, and growing green manure crops help to control erosion, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Seepage and the sandy texture are limitations to use of this soil as sites for sanitary facilities. Poor stability is a limitation for shallow excavations. Slope, potential frost action, and droughtiness are limitations to use of the soil as sites for small commercial buildings, local roads and streets, and lawns and landscaping. There are few limitations to other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

ArC—Arkport fine sandy loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly in short, convex, sloping areas and on the flanks of slightly dissected areas. Areas range from 10 to 45 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 7 inches thick. The subsoil is 51 inches thick. It is brown to light yellowish brown very fine sandy loam in the upper part. It is pale brown loamy fine sand that has bands of dark brown very fine sandy loam in the lower part. The substratum is light brownish gray fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Galen soils and somewhat poorly drained Minoa soils in low-lying areas and on toe slopes. Also included, where the soils are gravelly, are small areas of moderately well drained Phelps soils. Also included, in a few places, are some areas of nearly level and moderately steep soils.

The rate of water movement through this Arkport soil is moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use.

This soil is moderately suited to cultivated crops. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, contour tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture

reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage and the sandy texture are limitations to use of this soil as sites for most sanitary facilities. Poor stability is a limitation for shallow excavations. Slope is a limitation to use as sites for small commercial buildings. Slope, potential frost action, and droughtiness are limitations to most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

Be—Beaches. This map unit consists of sand beaches and, to a lesser extent, gravelly or stony beaches or gravel bars on the eastern shoreline of Lake Ontario, the St. Lawrence River, and offshore islands. Beaches are mainly long, narrow landscapes broken by inlets from the lake. Slope is 0 to 5 percent.

Included in mapping are areas of sand dunes and small marshes.

Beaches are generally devoid of vegetation, but the berms and included areas of dunes have scattered trees, bushes, grass, and annuals. The seasonal high water table is variable but ranges from a depth of less than 1/2 foot to more than 6 feet. The rate of water movement through the sandy deposits differs from place to place, but generally is rapid or very rapid. The capacity to store water available for plant growth is very low. Beaches are very droughty and generally extremely acid. Most beach areas are inundated during storms and periods of high wave action.

Beaches in most areas are in state parks and state wildlife habitat areas. They are also in privately owned areas or are used as waterfowl sanctuaries.

Beaches are not suited to use as cropland, pasture, or woodland. They are suited to use as recreation areas or as habitat for wildlife.

Beaches are subject to wave action and shifting sand. Onsite investigation is needed in areas used for urban development. If Beaches are used as sites for sanitary facilities, seepage and inadequate filtration of effluent can result in contamination of ground water and of adjacent, open, water bodies.

A capability subclass has not been assigned.

BfF—Benson channery silt loam, very rocky, 25 to 50 percent slopes. This is a steep and very steep, shallow, somewhat excessively drained and excessively drained soil. Some areas outline the crest of the Tughill Plateau. Rock outcrops make up as much as 10 percent of the areas. The soil is mainly in linear areas on ridges and terrace fronts. Areas of the soil range from 20 to 80 acres.

Typically, the surface layer of the Benson soil is dark brown channery silt loam about 3 inches thick. The subsoil is reddish brown and dark reddish brown channery silt loam to a depth of 12 inches. Limestone bedrock is at a depth of 12 inches.

Included with this soil in mapping, where bedrock is within 10 inches of the surface, are small areas of very shallow Galoo soils. Also included are small areas where stones are on the surface.

Bedrock in this Benson soil is within 10 to 20 inches of the surface. The rate of water movement through the soil is moderate. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is very low. The surface layer is moderately acid to neutral.

Most areas are woodland or reverting to brush. Some areas are idle.

This soil is not suited to farming and pasture because of slope and rock outcrops. It is best used as woodland or habitat for wildlife.

Potential productivity of this soil for sugar maple is moderate. Slope limits equipment use. In clear-cut areas erosion is a severe hazard. Droughtiness causes high seedling mortality. Depth to bedrock restricts rooting depth and results in uprooting of trees during windy periods.

Slope, depth to bedrock, and rock outcrops are limitations to use of this soil as sites for urban development. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIIe.

BgB—Benson-Galoo complex, very rocky, 0 to 8 percent slopes. This map unit consists of nearly level to gently sloping, shallow and very shallow, somewhat excessively drained and excessively drained soils. The soils are mainly in broad, undulating areas interspersed with rock outcrops on ridges. Rock outcrops make up as much as 10 percent of the areas. Areas of these soils range from 10 to 80 acres or more. Slope is 0 to 8 percent, but is dominantly less than 5 percent.

This unit is about 55 percent Benson soils, 35 percent Galoo soils, 5 percent rock outcrops, and 5 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Benson soil has a surface layer of dark brown channery silt loam about 3 inches thick. The subsoil is reddish brown and dark reddish brown very channery silt loam about 9 inches thick. Limestone bedrock is at a depth of 12 inches.

Typically, the Galoo soil has a surface layer of dark brown silt loam about 4 inches thick. The subsoil is reddish brown and brown channery silt loam to a depth of about 7 inches. Gray limestone bedrock is at a depth of 7 inches.

Included with this soil in mapping are small areas of well drained and somewhat excessively drained Farmington soils, moderately deep Galway soils, and somewhat poorly drained and poorly drained Newstead

soils. Also included are small areas where stones and boulders are on the surface.

Runoff on the Benson and Galoo soils is medium. The capacity of these soils to store water available for plant growth is very low. The surface layer is moderately acid to neutral in the Benson soil and moderately acid to mildly alkaline in the Galoo soil. Bedrock is at a depth of 10 to 20 inches in the Benson soil and is less than 10 inches below the surface in the Galoo soil.

Most areas of these soils are used as permanent pasture or cedar woodland or are reverting to brush. Some areas are idle.

These soils are generally not suited to cultivated crops. Potential use is mostly restricted to permanent pasture and woodland.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, drought-tolerant pasture reseeding, and application of lime and fertilizers.

Potential productivity for sugar maple on the Benson soil and for red maple on the Galoo soil is moderate. Droughtiness causes high seedling mortality. Depth to bedrock restricts rooting depth, resulting in a moderate rate of uprooting of trees during windy periods on the Benson soil and a high rate on the Galoo soil.

Depth to bedrock and rock outcrops are limitations to use of these soils as sites for urban development. Potential for habitat for openland and woodland wildlife is poor except on the Galoo soil, where potential for openland wildlife is very poor.

The capability subclass is VIs.

BhB—Bice fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly in smooth, irregular, sloping areas on the summit of hills and ridges of uplands. Areas range from 5 to 20 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil has a fragipan layer, are small areas of well drained and moderately well drained Pinckney soils. Also included are moderately deep, well drained and somewhat excessively drained Millsite soils and poorly drained and very poorly drained Ensley soils on flats and in depressions. Also included, where the soils have a high sand and shale content, are small areas of deep, well drained and moderately well drained Haights soils.

The rate of water movement through this Bice soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this prime farmland soil are woodland or are reverting to brush. Some areas that were cleared for cropland and pasture are planted to conifers. Large areas are in county and state reforestation tracts. A few areas are used for cultivated crops.

This soil is well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. There are few or no major management concerns for woodland use.

Seepage is a limitation to use of this soil as sites for most sanitary facilities. There are few or no major limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

BhC—Bice fine sandy loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly in short, complex, sloping areas on the flanks of hills and ridges on uplands. Areas range from 5 to 15 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil has a fragipan layer, are small areas of well drained and moderately well drained Pinckney soils. Also included are poorly drained and very poorly drained Ensley soils in nearly flat areas and in depressions. Also included, where the soils have a high content of sand and shale, are small areas of well drained and moderately well drained Haights soils.

The rate of water movement through this Bice soil is moderate or moderately rapid. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas that were cleared for cropland are planted

to conifers. Large areas are in county and state reforestation tracts. A few areas are used for cultivated crops.

This soil is moderately suited to cultivated crops. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, contour tillage, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. There are few or no major management concerns for woodland use.

Seepage is a limitation to use of this soil as sites for most sanitary facilities. Slope is a limitation for most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

BhD—Bice fine sandy loam, 15 to 25 percent slopes. This is a moderately steep, deep, and well drained soil mainly on the sides of hills and ridges in upland areas. Areas range from 5 to 15 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of about 26 inches. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is a dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil has a fragipan layer, are small areas of Pinckney soils. Also included, where the soils have a high content of sand and shale, are small areas of deep, well drained and moderately well drained Haights soils.

The rate of water movement through this Bice soil is moderate or moderately rapid. Runoff is rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas have been reforested to conifers. Some areas are in county and state reforestation tracts. A few areas are in pasture.

This soil is poorly suited to cultivated crops. The main limitation is slope. Erosion is a serious hazard if slopes are bare of vegetation. Contour tillage, long-term hay crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. Slope limits equipment use.

Seepage and slope are limitations to use of this soil as sites for sanitary facilities. Slope is a limitation for most other urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IVe.

BhF—Bice fine sandy loam, 25 to 50 percent slopes. This is a steep and very steep, very deep, well drained soil mainly on the sides and fronts of hills and ridges on uplands. Areas range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 26 inches. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is a dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil has a fragipan layer, are small areas of Pinckney soils. Also included are areas of Bice soils in lesser sloping areas. Also included, where the soils have a high content of sand and shale, are small areas of deep, well drained and moderately well drained Haights soils.

The rate of water movement through this Bice soil is moderate or moderately rapid. Runoff is rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas are idle or in county and state tracts in reforestation.

This soil is not suited to cultivated crops because of slope. Erosion is a serious hazard if slopes are bare of vegetation. Use of the soil as woodland or planting permanent sod cover is effective in controlling erosion.

Potential productivity of this soil for red maple is moderate. Erosion is a moderate hazard. Slope is a limitation to equipment use. Very careful management is needed to control erosion during logging operations.

Seepage and slope are limitations to use of this soil as sites for sanitary facilities. Slope is also a limitation to other urban uses. Potential for habitat for openland wildlife is poor and for woodland wildlife is good.

The capability subclass is VIIe.

BkC—Bice very stony fine sandy loam, 0 to 15 percent slopes. This is a nearly level to strongly

sloping, very deep, well drained soil mainly in broad, undulating to rolling areas on uplands. Stones about 3 to 25 feet apart are on the surface. Areas range from 20 to 100 acres or more.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of soils that are moderately steep and areas of poorly drained and very poorly drained Ensley soils in nearly flat areas and depressions on upland till plains.

The rate of water movement through this Bice soil is moderate or moderately rapid. The rate of surface runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas are in permanent pasture.

This soil is not suited to cultivated crops because of large stones on the surface.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Pasture renovation, pasture reseeding, and application of lime and fertilizers are very difficult because of the large stones on the surface.

Potential productivity of this soil for red maple is moderate. There are few or no major management concerns for woodland use.

Seepage, in some places slope, and large stones on the surface are limitations to use of this soil as sites for sanitary facilities. Slope and in some places stones on the surface are limitations on sites for small commercial buildings, local roads and streets, and lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is VIs.

BlB—Bice-Haights complex, undulating. This map unit consists of very deep, well drained and moderately well drained soils. Areas are mainly long and narrow or irregular in shape. They are on low-lying, undulating hills and ridges commonly adjacent to streams. They range from 10 to 50 acres. Slope ranges from 2 to 8 percent.

This unit is about 45 percent Bice soils, 35 percent Haights soils, and 20 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Bice soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Typically, the Haights soil has a surface layer of very dark grayish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. It is dark brown silt loam in the upper part and dark yellowish brown to brown shaly silt loam to shaly loam in the lower part. The substratum is grayish brown shaly loam that has thin lenses of gravelly sand and small pockets of fine sand to a depth of 60 inches or more.

Included with this unit in mapping are small areas of well drained and moderately well drained Pinckney soils on hills and ridges. Pinckney soils have a fragipan in the subsoil. Also included are areas of poorly drained and very poorly drained Gulf and Ensley soils in depressions and in long narrow, flat areas. Also included are small, wet areas, marshes, and areas that have short, steep slopes.

The rate of water movement through the Bice soil is moderate or moderately rapid. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Haights soil is commonly between a depth of 2 and 3 feet from February through April. The rate of water movement through the soil is moderate. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these prime farmland soils are woodland. Some areas are reverting to brush. Some areas are used for pasture. A small acreage is used for cultivated crops.

These soils are well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming helps to control erosion. Also, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizer.

Potential productivity for red maple on the Bice soil and for sugar maple on the Haights soil is moderate. There are few or no management concerns for woodland use.

Seepage on the Bice soil and the seasonal high water table on the Haights soil are limitations for most types of sanitary facilities. On the Bice soil, there are few additional limitations to other urban uses. On the Haights soil, the seasonal high water table is also a limitation for

shallow excavations and dwellings with basements. Potential of these soils is good for habitat for openland and woodland wildlife.

The capability subclass is IIe.

BIC—Bice-Haights complex, rolling. This map unit consists of very deep, well drained and moderately well drained soils. Areas are mainly long and narrow or irregular in shape. They are on low-lying, rolling hills and ridges commonly adjacent to streams. They range from 20 to 100 acres. Slope ranges from 8 to 16 percent.

This unit is about 45 percent Bice soils, 35 percent Haights soils, and 20 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Bice soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 60 inches or more.

Typically, the Haights soil has a surface layer that is very dark grayish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. It is dark brown silt loam in the upper part. Below that, to a depth of 60 inches or more, it is dark yellowish brown to brown shaly loam that has thin lenses of gravelly sand and small pockets of fine sand.

Included with this unit in mapping, where the subsoil has a dense fragipan, are small areas of well drained and moderately well drained Pinckney soils. Also included are poorly drained and very poorly drained Gulf and Ensley soils in depressions and in long, narrow, flat areas. Also included are small, wet areas, marshes, and areas that have short, steep slopes.

The rate of water movement through the Bice soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Haights soil is commonly within 2 and 3 feet of the surface from February through April. The rate of water movement through the soil is moderate. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are wooded. Some areas are reverting to brush. Some areas are used for pasture. A small acreage is used for cultivated crops.

These soils are moderately suited to cultivated crops. Erosion is a severe hazard if slopes are bare of vegetation. Contour farming helps to control erosion. Also, crop rotation with longer periods of sod, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for red maple on the Bice soil and for sugar maple on the Haights soil is moderate. There are few or no management concerns for woodland use.

On sites for most types of sanitary facilities, seepage and in some places slope are limitations on the Bice soil and the seasonal high water table and in some places slope are limitations on the Haights soil. On the Bice and Haights soils, slope is a limitation to most other urban uses. On the Haights soil, the seasonal high water table is a limitation for shallow excavations, on sites for dwellings with basements and small commercial buildings, and for most other urban uses. Potential is good for habitat for openland and woodland wildlife.

The capability subclass is IIIe.

BmB—Bice-Pinckney complex, undulating. This map unit consists of undulating, very deep, well drained and moderately well drained soils. Areas are mainly irregular in shape, round, or oblong. They are on undulating uplands. They range from 10 to 80 acres. Slope ranges from 2 to 5 percent.

This unit is about 45 percent Bice soils, 35 percent Pinckney soils, and 20 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Bice soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 72 inches or more.

Typically, the Pinckney soil has a surface layer of dark brown to dark grayish brown silt loam about 7 inches thick. The subsoil is about 57 inches thick. In the upper part it is yellowish brown and dark yellowish brown loam. In the lower part, between a depth of 22 and 64 inches, it is a firm and brittle layer called a fragipan. It is brown to dark grayish brown shaly loam. The substratum is dark brown, massive shaly loam to a depth of 72 inches or more.

Included with these soils in mapping are small areas of poorly drained and very poorly drained Ensley soils near intermittent drainageways and in depressions and organic Carbondale soils in bogs. Also included are short, steep slopes, stony spots, wet spots, and marshes.

The rate of water movement through the Bice soil is moderate or moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Pinckney soil is commonly within 1.5 to 2.0 feet of the surface from February through May. The firm layer, or fragipan, between a depth of 22 and 64 inches restricts plant roots and the downward movement of water. The rate of water movement through the soil is moderate above the fragipan, slow or very slow in the fragipan, and slow or moderately slow in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these prime farmland soils are woodland or are reverting to brush. Many areas have been reforested to conifers. Large areas are in county and state forest tracts. A few areas are used for cultivated crops and pasture.

These soils are well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for northern red oak on the Bice soil and for sugar maple on the Pinckney soil is moderate. There are few or no major management concerns for woodland use.

On sites for sanitary facilities, seepage is a limitation on the Bice soil and rate of water movement through the fragipan and the substratum and the seasonal high water table are limitations on the Pinckney soil. On the Bice soil, there are few or no limitations to most other urban uses. On the Pinckney soil, the seasonal high water table is a limitation to most other urban uses. Potential for habitat for openland and woodland wildlife is fair or good.

The capability subclass is IIe.

BmC—Bice-Pinckney complex, rolling. This map unit consists of very deep, well drained and moderately well drained soils. Areas are mainly irregular in shape and oblong. They are on rolling uplands.

This unit is about 45 percent Bice soil, 35 percent Pinckney soil, and 20 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Bice soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 20 inches thick. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 72 inches or more.

Typically, the Pinckney soil has a surface layer of dark brown to dark grayish brown silt loam about 7 inches thick. The subsoil is about 57 inches thick. In the upper part it is yellowish brown and dark yellowish brown loam. In the lower part, between a depth of 22 and 64 inches, it is a firm and brittle layer called a fragipan. It is brown to dark grayish brown shaly loam. The substratum is dark brown shaly loam to a depth of 72 inches or more.

Included with these soils in mapping are small areas of poorly drained and very poorly drained Ensley soils near intermittent drainageways and in depressions and organic Carbondale soils in bogs. Also included are short, steep slopes, stony spots, wet spots, and marshes.

Runoff on the Bice soil is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Pinckney soil is commonly within 1.5 to 2.0 feet of the surface from February through May. The firm layer, or fragipan, between 22 and 64 inches restricts plant roots and the downward movement of water. The rate of water movement through the soil is moderate above the fragipan, slow or very slow in the fragipan, and slow or moderately slow in the substratum. Runoff is rapid or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are woodland or are reverting to brush. Many areas have been reforested to conifers. Large areas are in county and state forest tracts. A few areas are used for cultivated crops and pasture.

These soils are moderately suited to cultivated crops. Erosion is a severe hazard if slopes are bare of vegetation. Contour farming, crop rotations with longer periods of sod crops, using winter cover crops, and returning crop residue to the soil help to maintain the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for northern red oak on the Bice soil and for sugar maple on the Pinckney soil is

moderate. There are few or no major management limitations for woodland use.

On sites for sanitary facilities, seepage is a limitation on the Bice soil and rate of water movement through the fragipan and the substratum, the seasonal high water table, and in some places slope are limitations on the Pinckney soil. On the Bice soil, slope is a limitation to most other urban uses. On the Pinckney soil, the seasonal high water table is a limitation for shallow excavations and on sites for small commercial buildings. In addition, on the Pinckney soil, in some places slope is a limitation to most other urban uses. Potential for habitat of these soils for openland and woodland wildlife is good, except on the Pinckney soil, where habitat for woodland wildlife is fair.

The capability subclass is IIIe.

BmD—Bice-Pinckney complex, hilly. This map unit consists of very deep, well drained and moderately well drained soils. Areas are mainly on hills and ridges on uplands. They range from 20 to 80 acres. Slope ranges from 16 to 30 percent.

This unit is about 45 percent Bice soil, 35 percent Pinckney soil, and 20 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Bice soil has a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 26 inches. It is yellowish brown coarse sandy loam in the upper part and brown gravelly sandy loam in the lower part. The substratum is dark grayish brown to grayish brown gravelly sandy loam to a depth of 72 inches or more.

The Pinckney soil has a surface layer of dark brown to dark grayish brown silt loam. The subsoil extends to a depth of 57 inches. In the upper part it is yellowish brown loam and dark yellowish brown loam. In the lower part, between a depth of 22 and 64 inches, it is a firm and brittle layer called a fragipan. It is brown to dark grayish brown shaly loam. The substratum is dark brown, massive shaly loam to a depth of 72 inches or more.

Included with these soils in mapping are small areas of Bice and Pinckney soils on lesser slopes. Also included are small areas that have a stony surface, wet spots, and marshes.

The rate of water movement through the Bice soil is moderate or moderately rapid. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Pinckney soil is commonly within 1.5 to 2.0 feet of the surface from February through May. The firm layer or fragipan, between a depth of 22 and 64 inches restricts plant roots and the downward movement of water. The rate of water movement through the soil is moderate above the fragipan, slow or very slow in the fragipan, and slow or moderately slow in the substratum. Runoff is rapid or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are woodland or are reverting to brush. Many areas have been reforested to conifers. Large areas are in county and state forest tracts. A very few areas are used for cultivated crops and pasture.

These soils are poorly suited to cultivated crops. The main limitation is slope. Erosion is a serious limitation if slopes are bare of vegetation.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for northern red oak on the Bice soil and for sugar maple on the Pinckney soil is moderate. Erosion is a moderate hazard. Slope limits equipment use. Very careful management is needed to control erosion during logging operations.

The main limitation of these soils to urban uses is slope. Other limitations are seepage on the Bice soil and rate of water movement through the fragipan and the substratum on the Pinckney soil. Potential of these soils for habitat for openland and woodland wildlife is fair, except on the Bice soil, where habitat for woodland wildlife is good.

The capability subclass is IVe.

BnA—Blasdell shaly silt loam, 0 to 3 percent slopes. This map unit consists of nearly level, very deep, well drained soils mainly in smooth, broad areas on terraces and in fan-shaped areas near streams. Areas range from 15 to 100 acres.

Typically, the surface layer is dark brown shaly silt loam about 8 inches thick. The subsoil is brown very shaly silt loam and very shaly loam that extends from a depth of 8 to 36 inches. The substratum is dark brown very shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Phelps soils in lower positions on the landscape. Also included, in low-lying areas and in depressions, are small areas of very poorly drained Halsey soils.

The rate of water movement through this Blasdell soil is moderately rapid. Runoff is slow. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops. Some areas are used for pasture or woodland.

This soil is well suited to cultivated crops. In some years it is slightly droughty during the growing season. If

it is properly managed, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage is a limitation to use of this soil as sites for most sanitary facilities. Potential frost action is a limitation for local roads and streets. Small stones are a limitation for lawns and landscaping. There are few or no other limitations to other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIs.

BnB—Blasdell shaly silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly on convex slopes on terraces and in fan-shaped areas. Areas range from 15 to 100 acres.

Typically, the surface layer is dark brown shaly silt loam about 8 inches thick. The subsoil is brown very shaly silt loam and very shaly loam that extends from a depth of 8 to 36 inches. The substratum is dark brown very shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Phelps soils in lower positions on the landscape. Also included are small areas of very poorly drained Halsey soils in low-lying, flat areas and in depressions.

The rate of water movement through this Blasdell soil is moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland.

This soil is well suited to cultivated crops. In some years it is slightly droughty during the growing season. Erosion is a moderate hazard if slopes are bare of vegetation. If it is properly managed, row crops can be grown intensively. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter, to conserve moisture needed for plant growth, and to control erosion.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage is a limitation to use of this soil as sites for most sanitary facilities. Slope is a limitation for small commercial buildings. Potential frost action is a limitation for local roads and streets. Small stones are a limitation for lawns and landscaping. There are few or no problems for other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIs.

BnC—Blasdell shaly silt loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly on convex slopes or terrace fronts and on the sides of fan-shaped areas. Areas range from 15 to 100 acres.

Typically, the surface layer is dark brown shaly silt loam about 8 inches thick. The subsoil is brown very shaly silt loam and very shaly loam that extends from a depth of 8 to 36 inches. The substratum is dark brown very shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Phelps soils on foot slopes. Also included are small areas of very poorly drained Halsey soils in depressions.

The rate of water movement through this Blasdell soil is moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used for pasture or woodland.

This soil is moderately suited to cultivated crops. It is slightly droughty during the growing season. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation with longer periods of sod crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage and in some places slope are limitations to use of this soil as sites for most sanitary facilities. Slope, potential frost action, and small stones are limitations to

most other urban uses. Potential for habitat for openland and woodland wildlife is fair.

The capability subclass is IIIe.

BoA—Bombay loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in rounded or irregularly shaped areas on the tops of hills and ridges. Areas range from 3 to 30 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsoil is mottled and about 31 inches thick. It is dark brown to brown loam in the upper part and dark brown gravelly fine sandy loam in the lower part. The substratum is mottled grayish brown gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Madrid soils on convex knolls and ridges and, where bedrock is within 40 inches of the surface, small areas of moderately deep, well drained and moderately well drained Galway soils. Also included, where the soils do not have coarse fragments, are small areas of moderately well drained Collamer soils and somewhat poorly drained Niagara soils. Also included are small, wet areas and stony areas.

The seasonal high water table in this Bombay soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow or moderate in the subsoil, and moderately slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some areas are used as pasture or woodland.

This soil is well suited to cultivated crops. If it is managed properly, row crops can be grown intensively. The seasonal high water table delays somewhat planting and harvesting crops. Random drainage is commonly needed for wet spots. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the substratum are limitations to use of this soil as sites for most sanitary facilities. The seasonal high water table is a limitation for shallow excavations and dwellings with basements. The seasonal high water table and potential frost action are limitations to most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

BoB—Bombay loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in oblong, concave areas on the top and lower sides of hills and ridges. Areas range from 5 to 25 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsoil is mottled and about 31 inches thick. It is dark brown to brown loam in the upper part and dark brown gravelly fine sandy loam in the lower part. The substratum is mottled, grayish brown, gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Madrid soils on convex knolls and ridges and, where bedrock is within 40 inches of the surface, small areas of moderately deep, well drained and moderately well drained Galway soils. Also included, where the soils do not have coarse fragments, are small areas of moderately well drained Collamer soils and somewhat poorly drained Niagara soils. Also included are small, wet areas and stony areas.

The seasonal high water table of this Bombay soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow or moderate in the subsoil, and moderately slow in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for crops for dairy farming. Some areas are used as pasture or woodland.

This soil is well suited to cultivated crops. If it is managed properly, row crops can be grown intensively. Erosion is a moderate hazard if slopes are bare of vegetation. Random drainage is commonly needed for wet spots. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the substratum are limitations to use

of this soil as sites for most sanitary facilities. The seasonal high water table is also a limitation for shallow excavations and dwellings with basements. The seasonal high water table and potential frost action are limitations to most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

BpB—Bonaparte gravelly loamy fine sand, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, excessively drained soil mainly in undulating areas on plains. Areas range from 8 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loamy fine sand about 5 inches thick. The subsoil is brown to dark brown gravelly and very gravelly loamy fine sand about 21 inches thick. The substratum is grayish brown to white, stratified sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping, where the soils do not have gravel, are small areas of excessively drained Plainfield and Windsor soils. Also included are small gravel pits and sand pits.

The rate of water movement through this Bonaparte soil is rapid in the surface layer and the subsoil and rapid or very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is very low. The surface layer is strongly acid to neutral.

Most areas of this soil are used as pasture or are planted to conifers. Some areas are used in commercial gravel and sand operations. A few areas are used for cultivated crops.

This soil is moderately suited to cultivated crops. It is droughty during the growing season. Wind and water erosion are moderate hazards. Contour farming, crop rotations with longer periods of sod crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, maintain soil tilth and the content of organic matter, and conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for northern red oak is moderate. The sandy texture and droughty conditions cause high seedling mortality.

Rate of water movement through this soil and seepage are limitations to use of the soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations. Droughtiness is a limitation for lawns and landscaping. There are few or no limitations to other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

BpC—Bonaparte gravelly loamy fine sand, 8 to 15 percent slopes. This is a sloping, very deep, excessively drained soil mainly on low-lying hills and ridges. Areas range from 8 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loamy fine sand about 5 inches thick. The subsoil is brown to dark brown gravelly and very gravelly loamy fine sand about 21 inches thick. The substratum is grayish brown to white stratified sand and gravel.

Included with this soil in mapping, where the soils do not have gravel, are small areas of excessively drained Plainfield and Windsor soils. Also included are small, gravel and sand pits.

The rate of water movement through this Bonaparte soil is rapid in the surface layer and the subsoil and rapid or very rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is very low. The surface layer is strongly acid to neutral.

Most areas of this soil are used as pasture or are planted to conifers. Some areas are used in commercial gravel and sand operations. A few areas are used for cultivated crops.

This soil is poorly suited to cultivated crops. The main limitations are slope and droughtiness during the growing season. Wind and water erosion are severe hazards. Contour farming, crop rotation with long periods of sod crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The sandy texture and droughty conditions cause high seedling mortality.

Rate of water movement through this soil, seepage, and slope are limitations to use of the soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations. Droughtiness is a limitation for lawns and landscaping. Slope is a limitation for most other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IVs.

Bt—Boots muck. This soil is very deep and very poorly drained. It is mainly in depressions or bogs. Areas

range from 20 to more than 100 acres. Slope is less than 1 percent.

Typically, the surface layer is covered by a layer of live sphagnum moss about 5 inches thick. The surface layer is very dark gray and dark reddish brown muck (sapric material) about 11 inches thick. The subsurface layer, about 89 inches thick, is dark reddish brown to dark brown mucky peat. Below that, to a depth of 140 inches or more, is a layer of clay and silt.

Included with this soil in mapping are small areas of Palms and Willette soils at the edge of some bogs where the organic deposits are thin. Also included are small areas of Saprists, Aquents, Fluvaquents, and Udifluvents.

The seasonal high water table in this Boots soil is commonly within 1 foot of the surface from November through August. Some areas are subject to occasional flooding or ponding by as much as 1 foot of water. The rate of water movement through the soil is moderate or moderately rapid. Runoff is very slow, or the soil is ponded. The capacity of the soil to store water available for plant growth is high. The surface layer ranges from moderately acid to neutral.

Most areas of this soil are woodland. The largest area is in a sphagnum-black spruce bog on the north side of Perch Lake. No areas have been cleared and drained for crops. In some places the soil is used as habitat for wetland wildlife.

This soil is not suited to crops or pasture because of prolonged wetness. Leaving areas in natural vegetation to serve as wildlife habitat is generally a suitable management practice.

Potential productivity for tamarack is moderate. The prolonged seasonal high water table limits equipment use, causes a high rate of seedling mortality, and restricts rooting depth, which causes uprooting of trees during windy periods.

The prolonged seasonal high water table, flooding, ponding, seepage, and excess humus are limitations to use of this soil for sanitary facilities. In addition, poor stability and potential frost action are limitations for other urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is Vw.

Ca—Canandaigua silt loam. This is a nearly level, very deep, poorly drained soil mainly in smooth, broad, nearly level areas and in slight depressions on plains. Areas range from 10 to 40 acres. Slope ranges from 0 to 3 percent.

Typically, the surface layer is very dark grayish brown silt loam and very dark gray clay loam about 10 inches thick. The subsoil is mottled and 48 inches thick. It is very dark grayish brown to grayish brown silt loam. The substratum is mottled, dark grayish brown silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Collamer soils and somewhat poorly drained Niagara soils on knolls and slightly raised benches. Also included are small areas of somewhat poorly drained Minoa soils and poorly drained and very poorly drained Lamson soils.

The seasonal high water table in this Canandaigua soil is commonly between the surface and a depth of 1 foot from November through May. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is very slow. The capability of the soil to store water available for plant growth is high. The surface layer is moderately acid to mildly alkaline.

Most areas have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops. Drainage is needed if the soil is used for cultivated crops. Unless drained, most areas are better suited to long-term hay. Returning crop residue and adding manure to the soil and using winter cover crops help to improve soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, causing uprooting of trees during windy periods.

The seasonal high water table, moderately slow percolation, and potential frost action are limitations of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IIIw.

Cb—Canandaigua mucky silt loam. This is a nearly level, very deep, very poorly drained soil mainly in depressions and bogs on plains. Areas range from 10 to 40 acres. Slope ranges from 0 to 3 percent.

Typically, the surface layer is black to very dark grayish brown mucky silt loam and very dark clay loam about 10 inches thick. The subsoil is mottled and 48 inches thick. It is very dark grayish brown to grayish brown silt loam. The substratum is mottled, dark grayish brown silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils on slightly raised benches. Also included, where the soils are loamy, are small areas of somewhat poorly drained Minoa soils and poorly drained and very poorly drained Lamson soils.

The seasonal high water table of this Canandaigua soil is commonly between the surface and a depth of 1 foot from November through May. Ponding is common in early spring. The rate of water movement through the soil is moderate in the surface layer and moderately slow

in the subsoil and the substratum. Runoff is ponded or very slow. The capability of the soil to store water available for plant growth is high. The surface layer is moderately acid to mildly alkaline.

Most areas are woodland or are reverting to brush. Some areas are pasture.

This soil, unless drained, is poorly suited to cultivated crops. Most areas are difficult to drain because suitable outlets are not available. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter in cultivated areas.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Drainage is commonly needed. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, causing uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the subsoil and the substratum, and potential frost action are limitations of this soil to urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is Vw.

Cc—Carbondale muck. This very deep, very poorly drained, organic soil is mainly in bogs and depressions on uplands. Slope is 0 to 3 percent. Areas range from 5 to 40 acres.

Typically, the surface layer is dark reddish brown to black muck about 10 inches thick. The subsurface layer, about 26 inches thick, is black muck. The bottom layer is dark reddish brown to very dark brown mucky peat to a depth of 60 inches or more.

Included with this soil in mapping, where mineral soil material is dominant, are small areas of poorly drained and very poorly drained Ensley soils on flats and in depressions. Also included, in areas that are inundated most of the year, are small areas of Saprists and Aquents. Also included are small areas of poorly drained and very poorly drained Gulf soils adjacent to streams.

The seasonal high water table in this Carbondale soil is commonly between the surface and a depth of 1 foot from September through May. The rate of water movement through the soil is moderately slow to moderately rapid in the surface and subsurface layers and moderate or moderately rapid in the bottom layer. Runoff is very slow. Most areas are ponded for brief periods in spring. The capacity of the soil to store water available for plant growth is high. The surface tier is strongly acid to mildly alkaline.

Most areas of this soil are woodland. Large areas are in county and state forest tracts.

Areas of this soil have not been cleared for farming or for use as pasture. Unless drained, the soil is not suited to cultivated crops or pasture because of the short growing season and ponding. It is mainly in remote areas of the Tughill Plateau, and drainage for crop production is generally not feasible.

This soil is not suited to pasture because of the prolonged seasonal high water table, ponding, and excess humus.

Potential productivity of this soil for balsam fir is high. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, causing uprooting of trees during windy periods.

The prolonged seasonal high water table, ponding, excess humus, low strength, and potential frost action limit use of this soil for urban development. Potential for habitat for wetland wildlife is good.

The capability subclass is VIw.

Cd—Carlisle muck. This is a very deep, very poorly drained, organic soil mainly in depressions or in bogs on lowland plains. Slope is 0 to 3 percent. Areas range from 20 to 100 acres.

Typically, the surface layer is black muck 19 inches thick. The subsurface and bottom layers, about 44 inches thick, are dark brown to dark reddish brown muck.

Included with this soil in mapping, where the organic deposits are less than 51 inches thick, are small areas of very poorly drained Palms soils in positions in some bogs. Also included, in the Henderson Pond bog and the Six Town Pond bog, are small areas of very poorly drained Willette soils that overlie clay. Also included are small areas of Saprists, Aquents, Fluvaquents, and Udifluvents.

The seasonal high water table in this Carlisle soil is between the surface and a depth of 1 foot from September through June. In early spring most areas are ponded with as much as 6 inches of water. The rate of water movement through the soil is moderate or moderately rapid. Runoff is very slow or ponded. The capability of the soil to store water available for plant growth is high. The surface layer is very strongly acid to neutral.

Most areas are woodland. A small acreage near Hyde Lake has been cleared and is used for vegetable crops.

This soil is not suited to cultivated crops. The main limitations are the prolonged seasonal high water table, ponding, and frost pockets.

This soil is not suited to pasture because of the prolonged seasonal high water table.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, causing uprooting of trees during windy periods.

The prolonged seasonal high water table, ponding, seepage, and excessive humus are limitations to use of this soil for sanitary facilities. In addition, poor stability and potential frost action are limitations to other urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is Vw.

ChB—Chatfield loam, rocky, 0 to 8 percent slopes. This is a nearly level to gently sloping, moderately deep, well drained and somewhat excessively drained soil mainly in undulating areas on uplands. Rock outcrops make up 0.1 to 1.0 percent of the surface. Areas range from 5 to 25 acres.

Typically, the surface layer is covered by a thin, organic layer. The surface layer is dark brown loam about 4 inches thick. The subsoil is about 16 inches thick. It is dark brown loam in the upper part and yellowish brown loam in the lower part. The substratum is brown sandy loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches.

Included with this soil in mapping, where the soils are very thin over bedrock, are small areas of shallow, well drained and excessively drained Hollis soils and very shallow, excessively drained Galoo soils.

Bedrock in this Chatfield soil is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas are in pasture. A few areas are in crops.

This soil is suited to cultivated crops. The limitations are moderate droughtiness during the growing season and scattered rock outcrops. Erosion is a moderate hazard if slopes are bare of vegetation. Crop rotation, contour farming, using winter cover crops, and returning crop residue and applying manure to the soil help to control soil erosion, to maintain soil tilth and to increase the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock, rock outcrops, and seepage are limitations to use of this soil as sites for sanitary facilities. Depth to bedrock is a limitation for shallow excavations and dwellings with basements. Potential frost action and moderate droughtiness are limitations to other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIe.

CkC—Chatfield-Rock outcrop complex, rolling. This map unit consists of moderately deep, well drained and somewhat excessively drained Chatfield soil and areas of Rock outcrop. Rock outcrop makes up 10 to 50 percent of most areas. This soil and Rock outcrop are mainly in rolling areas and on low-lying ridges and knolls. They range from 10 to 60 acres. Slope ranges from 5 to 15 percent.

This unit is about 55 percent Chatfield soil, 20 percent Rock outcrop, and 25 percent other soils. The Chatfield soil and Rock outcrop are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Chatfield soil is covered by a thin, organic layer. The surface layer is dark brown loam about 4 inches thick. The subsoil is about 16 inches thick. It is dark brown loam in the upper part and yellowish brown loam in the lower part. The substratum is brown sandy loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches or more.

Typically, Rock outcrop consists of exposures of hard and brittle, well fractured, and jointed gneiss or granite bedrock.

Included with this unit in mapping are small areas of shallow, well drained and somewhat excessively drained Hollis soils on ridges and poorly drained and very poorly drained Ruse soils in flats and depressions. Also included, where the soil deposits are clayey, are small areas of deep, somewhat poorly drained Rhinebeck soils. Also included are small areas where stones and boulders are on the surface.

Depth to bedrock in the Chatfield soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas are used for permanent pasture or are reverting to brush. Some areas are woodland. A few areas near the St. Lawrence River are in recreation use (fig. 6).

This soil is not suited to cultivated crops because of rock outcrops.

If used for pasture, the Chatfield soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of the Chatfield soil for sugar maple is moderate. Rock outcrops are the major management concern.

Depth to bedrock, rock outcrops, seepage, and slope are limitations to use of this Chatfield soil as sites for sanitary facilities. In addition, potential frost action and

Figure 6.—Chatfield-Rock outcrop complex, rolling, near the St. Lawrence River, provides scenic areas for picnicking and other recreation activities.

moderate droughtiness are limitations to other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is VIs.

CkE—Chatfield-Rock outcrop complex, steep. This map unit consists of steep, moderately deep, well drained and somewhat excessively drained Chatfield soil and areas of Rock outcrop. Rock outcrop makes up 10 to 50 percent of most areas. This soil and Rock outcrop are mainly in moderately steep and steep areas and on the sides of ridges and hills. Areas range from 20 to 100 acres. Slope ranges from 15 to 35 percent.

Typically, this unit is about 45 percent Chatfield soil, 45 percent Rock outcrop, and 10 percent other soils. The Chatfield soil and areas of Rock outcrop are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Chatfield soil has a surface layer of dark brown loam about 4 inches thick. The subsoil is about 16

inches thick. It is dark brown loam in the upper part and yellowish brown loam in the lower part. The substratum is brown sandy loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches or more.

Typically, Rock outcrop consists of exposures of hard and brittle, well fractured, jointed gneiss or granite bedrock.

Included with this unit in mapping, where bedrock is less than 20 inches below the surface, are small areas of shallow, well drained and somewhat excessively drained Hollis soils. Also included are small areas where stones and boulders are on the surface.

Depth to bedrock in the Chatfield soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to moderately acid.

Most areas are woodland or are reverting to brush. Some areas are in permanent pasture.

The Chatfield soil is not suitable for cultivated crops because of slope and rock outcrops.

If used for pasture, the Chatfield soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of the Chatfield soil for sugar maple is moderate. Erosion is a moderate hazard. Slope and rock outcrops are major management concerns for woodland use. Careful management is needed to control erosion during logging operations.

Slope, depth to bedrock, and rock outcrops are limitations of the Chatfield soil for urban use. Potential for habitat is poor for openland wildlife and fair for woodland wildlife.

The capability subclass is VIIe.

ClA—Chaumont silty clay, 0 to 3 percent slopes. This is a nearly level, moderately deep and somewhat poorly drained soil on slightly convex, broad flats on lowland plains. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 100 acres.

Typically, the surface layer is dark grayish brown silty clay about 5 inches thick. The subsoil is mottled and about 22 inches thick. It is grayish brown to dark grayish brown clay in the upper part and dark grayish brown silty clay in the lower part. Limestone bedrock is at a depth of 27 inches.

Included with this soil in mapping are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions and moderately deep, moderately well drained Wilpoint soils on knolls. Also included, where the soil deposits are more than 40 inches deep, are somewhat poorly drained Kingsbury soils, poorly drained Covington soils, and very poorly drained Livingston soils. Also included are soils that are similar to this Chaumont soil but that are lower in clay content in the subsoil. Also included, in some units, are small areas of rock outcrops and rock fragments.

The seasonal high water table in this Chaumont soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is slow or very slow. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland. A few areas have been reforested to conifers. A few areas are in urban use, and some areas are idle.

This soil is moderately suited to cultivated crops. Drainage is needed if the soil is intensively cropped. Land smoothing and surface drains with proper outlets are effective in draining the soil. Fall plowing is common. Wetness somewhat delays planting and harvesting crops. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, causing uprooting of trees during windy periods.

The seasonal high water table, depth to bedrock, rate of water movement through the soil, and the clayey texture are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table, depth to bedrock, poor stability, high shrinking and swelling, and potential frost action are limitations to other urban uses. Potential for habitat is fair for both openland and woodland wildlife.

The capability subclass is IIIw.

ClB—Chaumont silty clay, 3 to 8 percent slopes. This is a gently sloping, moderately deep and somewhat poorly drained soil in concave, sloping areas on lowland plains. Bedrock is commonly at a depth of 20 to 40 inches. Areas range from 10 to 100 acres.

Typically, the surface layer is dark grayish brown silty clay about 5 inches thick. The subsoil is mottled and about 22 inches thick. It is grayish brown to dark grayish brown clay in the upper part and dark grayish brown silty clay in the lower part. Massive, level-bedded limestone is at a depth of 27 inches or more.

Included with this soil in mapping are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions and moderately deep, moderately well drained Wilpoint soils on knolls. Also included, where the soil deposits are more than 40 inches deep, are somewhat poorly drained Kingsbury soils, poorly drained Covington soils, and very poorly drained Livingston soils. Also included are soils that are similar to Chaumont soils but that are lower in clay content in the subsoil. Also included are small areas of rock outcrops and rock fragments.

The seasonal high water table in this Chaumont soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is slow or very slow. Runoff is medium or slow. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland. A few areas have been reforested to conifers. A few areas are in urban use or are idle.

This soil is moderately suited to cultivated crops. Drainage is needed in intensively cropped areas. Land smoothing and surface drains with proper outlets are effective in draining the soil. Fall plowing is common. Erosion is a serious hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat restricts equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, depth to bedrock, the clayey texture, and rate of water movement through the soil are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table, depth to bedrock, poor stability, high shrinking and swelling, and potential frost action are limitations to other urban uses. Potential for habitat is fair for both openland and woodland wildlife.

The capability subclass is IIIw.

CmA—Claverack loamy fine sand, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in smooth, oval areas on the tops of benches in lowland areas. Areas range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 8 inches thick. The subsoil is mottled and about 32 inches thick. It is pale brown and brown loamy sand in the upper part and dark grayish brown silty clay in the lower part. The substratum is dark grayish brown silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping, where the surficial mantle is loamy, are small areas of moderately well drained Elmridge soils and poorly drained Shaker soils. Also included, where there is no sandy mantle, are small areas of somewhat poorly drained Rhinebeck soils and, where there is no underlying, clayey substratum, somewhat poorly drained Minoa soils. Also included are small clay spots.

The seasonal high water table in this Claverack soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is rapid in the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops. Some previously cleared areas have been planted to conifers. Some areas are used as pasture or woodland. A few areas are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Drainage is commonly needed for wet spots. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table, seepage, the clayey texture, and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table and poor stability are limitations for shallow excavations and buildings with basements. The seasonal high water table, potential frost action, and droughty conditions are limitations to

other urban uses. Potential for habitat for both openland and woodland wildlife is good.
The capability subclass is IIw.

CmB—Claverack loamy fine sand, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in short, concave, sloping areas on the sides of ridges, knolls, and benches. Areas range from 10 to 50 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 8 inches thick. The subsoil is mottled and about 32 inches thick. It is pale brown and brown loamy sand in the upper part and dark grayish brown silty clay in the lower part. The substratum is dark grayish brown silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping, where the soil deposits are loamy rather than sandy, are small areas of moderately well drained Galen and Elmridge soils. Also included, in areas that do not have a sandy mantle, are somewhat poorly drained Rhinebeck soils and moderately well drained Hudson soils. Also included are small clay spots.

The seasonal high water table in this Claverack soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is rapid in the upper part of the subsoil and slow or very slow in the lower part of the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops. Some previously cleared areas have been planted to conifers. Some areas are used as pasture or woodland. A few areas are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. In cultivated areas drainage is commonly needed for wet spots. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve water needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

The seasonal high water table, seepage, the clayey texture, and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. Also, the seasonal high water table and poor stability are limitations for shallow excavations and buildings with basements. The seasonal high water table, potential frost action, and droughty conditions are limitations to other urban uses. Potential for habitat for both openland and woodland wildlife is good.
The capability subclass is IIw.

CnB—Collamer silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in convex, sloping areas on plains. Areas range from 2 to 60 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The subsoil is mottled and about 18 inches thick. It is light brownish gray to brown silt loam and silty clay loam. The substratum is mottled, grayish brown, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils in flat areas and in depressions. Also included, where bedrock is within 40 to 72 inches of the surface, are small areas of Collamer soils. Also included are small areas that have a clayey surface texture. Also included are small sandy areas.

The seasonal high water table of this Collamer soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and the subsurface layers and slow or moderately slow in the subsoil and the substratum. Runoff is medium. The capacity for the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are highly productive, farm woodlots. Some areas are in urban use. A few areas are in pasture.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed in areas used for cultivated crops. Conservation tillage, till and plant on the contour for short slopes, and strip cropping on the contour for longer slopes are suitable management practices. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing

when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no management concerns for woodland uses.

The seasonal high water table, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to use of this soil for most urban uses. Erosion is a severe hazard on building sites. Low soil strength is also a limitation for some urban uses. There are few limitations on sites for sewage lagoons and area landfills and for lawns and landscaping. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIe.

CnC—Collamer silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly on the shoulders of short and narrow, convex ridges, knolls, and benches on lowland plains. Areas range from 8 to 100 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The subsoil is mottled and about 18 inches thick. It is light grayish brown to brown silt loam to silty clay loam. The substratum is mottled, grayish brown, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils in low, flat areas and in depressions. Also included, where bedrock is within 40 to 72 inches of the surface, are small areas of Collamer soils. Also included are small areas of soils that have a clay surface layer. Also included are small sandy areas.

The seasonal high water table of this Collamer soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and subsurface layers and slow or moderately slow in the subsoil and the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are in urban use or are highly productive, farm woodlots. A few areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops, but requires careful management to control erosion. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, till and plant on the contour on the short slopes, and stripcropping on the contour on the longer slopes are suitable management practices. Crop rotation with long periods of hay, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. Erosion is a moderate hazard. During logging operations careful management is required to control erosion.

The seasonal high water table, slope, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to use of this soil for most urban uses. Erosion is a severe hazard on building sites. Low soil strength is also a limitation for some urban uses. There are few limitations on sites for area landfills and shallow excavations and for lawns and landscaping. Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIIe.

CnC3—Collamer silt loam, 8 to 15 percent slopes, severely eroded. This is a sloping, very deep, moderately well drained, severely eroded soil mainly on the shoulders of short and narrow, convex ridges, knolls, and benches on lowland plains. The surface layer commonly incorporates the upper part of the subsoil. Areas range from 10 to 150 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. It is not as dark as that of the uneroded Collamer soils, and is as little as 2 inches thick. The subsoil is mottled and extends to a depth of 32 inches. It is light grayish brown to brown silt loam and silty clay loam. The substratum is mottled, stratified silt, fine sand, and clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils on foot slopes and small areas of Collamer soils that have bedrock within 40 to 72 inches of the surface. Also included are small areas of soils where the surface layer is not severely eroded.

The seasonal high water table in this Collamer soil is commonly within a depth of 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface and subsurface layers, and slow or moderately slow in the subsoil and the substratum. Runoff is rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil are in pasture, have been replanted to conifers, or are idle. Some areas are used for cultivated crops.

This soil is poorly suited to cultivated crops, but requires very careful management to control erosion. This soil tends to be droughtier and less productive than the noneroded Collamer soils. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, till and plant on the contour on the short slopes, and strip crops on the contour on the longer slopes are suitable management practices. Crop rotation with long periods of hay, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Erosion is a moderate hazard. During logging operations very careful management is required to control erosion.

The seasonal high water table, slope, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to most urban uses. There are few limitations on sites for area landfills and shallow excavations and for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IVe.

CoB—Collamer silt loam, bedrock substratum, 3 to 8 percent slopes. This is a deep, gently sloping, moderately well drained soil in convex, sloping areas of lowland plains. Bedrock is at a depth of 40 to 60 inches. Areas range from 2 to 60 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is yellowish brown silt loam about 6 inches thick. The subsoil is mottled and about 18 inches thick. It is light brownish gray to brown silt loam and silty clay loam. The substratum is mottled and extends from 32 to 40 inches. It is grayish brown, stratified silt, fine sand, and clay. Bedrock is at a depth of 40 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Niagara soils in low parts of the landscape. Also included are some areas that have bedrock within 20 to 40 inches of the surface. Also included are sloping Collamer soils. Also included are small, stony areas, wet spots, and sand spots.

The seasonal high water table in this Collamer soil is commonly with 1 1/2 to 2 feet of the surface from March through May. Depth to bedrock is between 40 and 60 inches. The rate of water movement through the soil is moderate in the surface and subsurface layers and slow or moderately slow in the subsoil and the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops for dairy farming. Some areas are highly productive, farm woodlots. A few areas are in pasture.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for wet spots. Conservation tillage, till and plant on the contour on the short slopes, and strip crops on the contour on the longer slopes are suitable management practices. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland uses.

The seasonal high water table, depth to bedrock, rate of water movement through the subsoil and the substratum, and potential frost action are limitations to most urban uses. Erosion is a severe hazard on building sites. Low soil strength is also a limitation for some urban uses. There are few limitations on sites for sewage lagoons and area landfills and for lawns and landscaping.

Potential for habitat for both openland and woodland wildlife is good.

The capability subclass is IIe.

Cp—Covington silty clay. This is a nearly level, very deep, poorly drained soil in smooth, broad, mostly level areas and partly depressional areas of lowland plains. Areas range from 15 to 100 acres. Slope ranges from 0 to 3 percent, but is predominantly less than 1 percent.

Typically, the surface layer is very dark gray silty clay about 6 inches thick. The subsoil is mottled and about 26 inches thick. It is dark gray to grayish brown clay. The substratum is mottled, gray, firm, sticky and plastic silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of deep, somewhat poorly drained Kingsbury soils on flats and in gently concave sloping areas and deep, very poorly drained Livingston soils in deep depressions and adjacent to drainageways. Also included, where bedrock is 20 to 40 inches below the surface, are small areas of

somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils. Also included are small, sandy areas and stony areas.

The seasonal high water table in this Covington soil is commonly within 1/2 to 1 foot of the surface from October through May. The rate of water movement through the soil is slow or very slow in the surface layer and very slow in the subsoil and the substratum. Runoff is slow. The capability of the soil to store water available for plant growth is moderate or high. The surface layer is moderately acid to neutral.

Many areas of this soil have been cleared and are used for cultivated crops. Some previously cleared areas are idle or have been planted to conifers. Some areas are used as pasture or woodland.

This soil is poorly suited to cultivated crops. Drainage is needed if this soil is used for cultivated crops. Land smoothing and surface drainage with suitable outlets are effective in draining this soil for crops. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action are limitations of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

DcB—Danley silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in convex, sloping areas on the top of hills and ridges. Areas range from 5 to 30 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 6 inches thick. The subsoil is mottled and about 32 inches thick. It is brown to dark grayish brown shaly clay loam. The substratum is mottled and grayish brown shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Darien soils on foot slopes and in nearly level areas. Also included are small areas where large stones are on the surface, wet spots, marshes, and areas that have short, steep slopes.

The seasonal high water table of this Danley soil is commonly within 1 1/2 to 2 feet of the surface layer from March through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops. Some previously cropped areas have been reforested to conifers. Other areas are used as pasture or woodland or are idle. Some wooded areas are state and county reforestation areas.

This soil is well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table, rate of water movement through the subsoil and the substratum, and potential frost action are limitations of this soil for some urban uses. The seasonal high water table and slope are limitations on sites for sewage lagoons, area landfills, dwellings without basements, and small commercial buildings and for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

DcC—Danley silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly in oblong, short, convex, sloping areas on the flanks of hills and ridges. Areas range from 5 to 40 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 6 inches thick. The subsoil is mottled and about 32 inches thick. It is brown to dark grayish brown shaly clay loam. The substratum is mottled, dark grayish brown shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Darien soils on foot slopes. Also included, in some places where clay content is lower than in this Danley soil, are areas of well drained Madrid soils. Also included, in some places on terraces

next to streams, are areas of well drained and moderately well drained Haights soils. Also included are small areas where large stones are on the surface, wet spots, and marshes.

The seasonal high water table in this Danley soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of this soil have been cleared and are used for cultivated crops. Some previously cropped areas have been reforested to conifers. Other areas are used as pasture or woodland or are idle. Some wooded areas are state and county reforestation areas.

This soil is moderately suited to cultivated crops. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotations with long-term hay crops, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no management concerns for woodland use.

The seasonal high water table, rate of water movement through the subsoil and the substratum, potential frost action, and slope are limitations of this soil for some urban uses. The seasonal high water table and slope are limitations on sites for area sanitary landfills and dwellings without basements and for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

DcD—Danley silt loam 15 to 25 percent slopes. This is a moderately steep, very deep, moderately well drained soil mainly in narrow, short, convex, sloping areas on the sides of hills and ridges. Areas range from 5 to 40 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 6 inches thick. The subsoil is mottled and about 32 inches thick. It is brown to dark grayish brown shaly clay loam. The substratum is mottled, dark grayish brown shaly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Darien soils on foot slopes and toe slopes. Also included in some places are areas of well drained Lagross soils near streams and, where clay content is lower than in this Danley soil, small areas of well drained Madrid soils. Also included are small areas where large stones are on the surface and wet spots.

The seasonal high water table in this Danley soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Many areas of this soil have been cleared and are used for pasture. Some previous areas of pasture have been reforested to conifers. Other areas are woodland or idle. Some wooded areas are state and county reforestation areas.

This soil is poorly suited to crops because of slope. Erosion is a serious hazard if slopes are bare of vegetation. Crop rotation with long-term hay crops and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Slope somewhat limits equipment use. Erosion is a moderate hazard if the soil is poorly managed during logging operations or if slopes are bare of vegetation.

Slope, the seasonal high water table, rate of water movement through the substratum, and potential frost action are limitations of this soil for most urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IVe.

DdA—Darien silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, oblong, and irregularly shaped areas on uplands. Areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown to brown silt loam about 9 inches thick. The subsurface layer is mottled, brown silt loam about 5 inches thick. The subsoil is mottled and about 29 inches thick. It is grayish brown silty clay loam and shaly silty clay loam in the upper part and dark grayish brown shaly clay loam in the lower part. The substratum is brown shaly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Angola soils. Also included are small areas of poorly drained soils and small areas of gently sloping and sloping soils. Also included are small, stony areas.

The seasonal high water table in this Darien soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is low. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some previously cultivated areas have been reforested to conifers. Other areas are used as pasture or woodland or are idle. Some wooded areas are state and county reforestation areas.

This soil is moderately suited to cultivated crops. Random drainage is commonly needed if the soil is used for cultivated crops. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat restricts equipment use, causes moderate seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the subsoil and the substratum, and potential frost action are limitations of this soil for most urban uses. There are few limitations on sites for sewage lagoons and for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIw.

DdB—Darien silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil mainly in short, concave, sloping areas on uplands. Areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown to brown silt loam about 9 inches thick. The subsurface layer is mottled, brown silt loam about 5 inches thick. The subsoil is mottled and about 29 inches thick. It is grayish brown silty clay loam and shaly silty clay loam in the upper part and dark grayish brown shaly clay loam in the lower part. The substratum is brown shaly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Angola soils. Also included are small areas of poorly drained soils and small areas of sloping soils. Also included are small, stony areas.

The seasonal high water table in this Darien soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some previously cultivated areas have been reforested to conifers. Other areas are used as pasture or woodland or are idle. Some wooded areas are state and county reforestation areas.

This soil is moderately suited to cultivated crops. Random drainage is commonly needed if the soil is used for cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and restricts rooting depth, resulting in uprooting of some trees during windy periods.

The seasonal high water table, rate of water movement through the subsoil and substratum, and potential frost action are limitations of this soil for most urban uses. The seasonal high water table is a limitation for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

DdC—Darien silt loam, 8 to 15 percent slopes. This is a sloping, very deep, somewhat poorly drained soil mainly in concave, sloping areas on uplands. Areas range from 5 to 40 acres.

Typically, the surface layer is very dark grayish brown to brown silt loam about 9 inches thick. The subsurface layer is mottled, brown silt loam about 5 inches thick. The subsoil is mottled and about 29 inches thick. It is grayish brown silty clay loam and shaly silty clay loam in the upper part and dark grayish brown silty clay loam in

the lower part. The substratum is brown shaly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Angola soils. Also included are small areas of poorly drained soils and small areas of moderately steep soils. Also included are small, stony areas.

The seasonal high water table in this Darien soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer, moderately slow in the subsoil, and slow in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some previously cultivated areas have been reforested to conifers. Other areas are used as pasture or woodland or are idle. Some wooded areas are state and county reforestation areas.

This soil is moderately suited to cultivated crops. Random drainage is commonly needed if the soil is used for cultivated crops. Slopes are mostly short, and if they are bare of vegetation, erosion is a serious hazard. Conservation tillage, contour farming, crop rotation with long-term hay crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and applications of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderately high. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and restricts rooting depth, resulting in uprooting of some trees during windy periods.

The seasonal high water table, rate of water movement through the subsoil and the substratum, potential frost action, and slope are limitations of this soil for most urban uses. The seasonal high water table is a limitation for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

DeB—Deerfield loamy fine sand, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, moderately well drained soil mainly in undulating areas on terraces and lowland plains. Areas range from 10 to 35 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 7 inches thick. The subsoil is about 21 inches thick and is mottled in the lower part. It is yellowish brown loamy fine sand. The substratum is mottled, light brownish gray fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils and very poorly drained Scarboro soils. Also included, where the substratum is neutral to mildly alkaline, are areas of Deerfield soils. Also included are sand pits, blowout areas, wet spots, and marshes.

The seasonal high water table of this Deerfield soil is commonly at a depth of 1 1/2 to 3 feet below the surface from December through April. The rate of water movement through the soil is rapid in the surface layer and the subsoil and rapid or very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer ranges from very strongly acid to slightly acid.

Most areas have been cleared and are used for crops or pasture. Some areas are woodland. Many cleared areas are reverting to brush.

This soil is moderately suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. In some years droughtiness limits crop growth in midsummer. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter, to control erosion, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for eastern white pine is high. The seasonal high water table and midsummer droughtiness cause moderate seedling mortality.

Rate of water movement through the soil, the seasonal high water table, and the sandy texture are limitations of this soil as sites for sanitary facilities. Poor stability and the seasonal high water table are limitations for shallow excavations and on sites for dwellings with basements. The seasonal high water table, potential frost action, moderate droughtiness, and in some places slope are limitations to other urban uses. Potential for habitat is fair for openland wildlife and poor for woodland wildlife.

The capability subclass is IIIw.

Dp—Dumps. This map unit consists mostly of excavations for dumping refuse and trash. Some already have been filled or are partly filled. In some areas the refuse is dumped in natural low spots with little excavation, but more commonly the dump site is a series of trenches dug by backhoe or bulldozer. At most sites

the refuse is partly covered or mixed with earthy material. The sides of most trenches are steep, and the floor is nearly level or undulating piles of trash and debris. Areas are mostly irregularly shaped or rectangular, depending on topography and ownership boundaries, and are commonly 2 to 20 acres.

Some of the refuse is organic wastes, such as garbage, paper, and wood. In some places organic wastes are relatively undecomposed, but in other areas they are well decomposed or partly burned. The refuse commonly contains bottles, cans, wire, slabs of asphalt, bricks, tires, old appliances, and car parts. Some areas of decomposing rubbish emit a sulfur-like odor.

Included with Dumps in mapping, in some dumps, are small pools of water. In some large areas, the soil material covering the debris and rubbish is as much as 60 inches thick.

Dumps are generally devoid of vegetation, except for scattered bushes and grass in open areas. Commonly, the earthy floor in excavations is highly compacted, and allows slow infiltration of rainwater. Depth and degree of compaction of the refuse differs from place to place.

Reclamation of abandoned dumps for other uses requires careful management. Large quantities of earthy fill and extensive grading are generally needed to adequately landscape areas for tillage and planting. Large amounts of organic matter and fertilizers are needed to make reclaimed areas productive.

Most areas of Dumps, even if properly landscaped, are not suitable for urban uses because subsidence is a hazard. Subsidence results from settling and decomposition of buried trashy material. Onsite investigation is essential to determine the suitability of abandoned dumps for any intended use.

In some areas seepage of liquid wastes and effluent from dump sites is a hazard and can result in contamination of streams, ponds, or ground water. Potential for habitat for wildlife is poor, although some birds prefer to nest in these areas.

A capability subclass has not been assigned.

ElA—Elmridge fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in smooth, oval or round areas on lowland plains or terraces. Areas range from 15 to 45 acres.

Typically, the surface layer is dark brown fine sandy loam about 10 inches thick. The subsoil is mottled and about 24 inches thick. It is strong brown to yellowish brown fine sandy loam in the upper part and dark grayish brown silty clay in the lower part. The substratum is dark grayish brown silty clay to a depth of 60 inches or more.

Included with this soil in mapping, where the surficial mantle is sandy, are small areas of moderately well drained Claverack soils. Also included are poorly drained Shaker soils in nearly level areas and in depressions. Also included are small areas of moderately well drained, clayey Vergennes and Hudson soils on short, convex slopes and somewhat poorly drained Kingsbury and Rhinebeck soils in nearly level areas and on concave slopes. Also included are small areas of wetter soils and small areas of stony soils.

The seasonal high water table in this Elmridge soil is commonly within a depth of 1 1/2 to 3 feet of the surface from November through May. The rate of water movement through the soil is moderately rapid in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some previously cleared areas have been planted to conifers. Some areas are used as pasture or woodland. A few areas are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for wet spots. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations of this soil on sites for sanitary facilities and for many other urban uses. Potential frost action and the clayey texture in the substratum cause this soil to be unstable for many construction uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

ElB—Elmridge fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in smooth, irregular areas and on concave slopes on plains or terraces. Areas range from 10 to 50 acres.

Typically, the surface layer is dark brown fine sandy loam about 10 inches thick. The subsoil is mottled and about 24 inches thick. It is strong brown to yellowish brown fine sandy loam in the upper part and dark grayish brown silty clay in the lower part. The substratum is dark grayish brown silty clay to a depth of 60 inches or more.

Included with this soil in mapping, where the surficial mantle is sandy, are small areas of moderately well drained Claverack soils. Also included are poorly drained Shaker soils in nearly level areas and in depressions. Also included are small areas of moderately well drained, clayey Vergennes and Hudson soils on convex slopes and somewhat poorly drained Kingsbury and Rhinebeck soils in nearly level areas and on concave slopes. Also included are small areas of wetter soils and small areas of stony soils.

The seasonal high water table in this Elmridge soil is commonly within a depth of 1 1/2 to 3 feet of the surface from November through May. The rate of water movement through the soil is moderately rapid in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some previously cleared areas have been planted to conifers. Some areas are used as pasture or woodland. A few areas are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for wet spots. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter, to control erosion, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations of this soil for many urban uses. Potential frost action and the clayey texture of the subsoil and the substratum cause this soil to be unstable for many construction uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

Em—Ensley silt loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly on long, narrow, flat areas and in round depressions on uplands. Areas range from 10 to 80 acres. Slope ranges from 0 to 5 percent, but is dominantly less than 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 18 inches thick. It is grayish brown to yellowish brown sandy loam in the upper part and grayish brown gravelly sandy loam in the lower part. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carbondale soils in bogs and Saprists and Aquents in areas that are inundated most of the year. Also included are a few small areas of well drained and moderately well drained Bice soils on hillsides and ridges. Some areas have a mucky surface layer. Also included are small, stony areas.

The seasonal high water table in this Ensley soil is commonly between the surface and 1 foot below the surface from November through June. Most areas are ponded in spring. The rate of water movement through the soil is moderately rapid in the surface layer, moderate in the subsoil, and moderately rapid in the substratum. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is moderate. The surface layer is slightly acid to mildly alkaline.

Most areas of this soil are woodland. Some areas that were in pasture are reverting to brush. Some areas are in county and state forest tracts.

This soil is poorly suited to cultivated crops because of the prolonged seasonal high water table. Drainage is difficult to establish because suitable outlets are not available.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, ponding, seepage, and potential frost action are limitations to use of this soil for urban development. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

En—Ensley very stony silt loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in long, narrow areas or in rounded depressions on uplands. Large stones 5 to 25 feet apart are on the surface. Areas range from 10 to 30 acres. Slope ranges from 0 to 5 percent, but is dominantly less than 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 18 inches thick. It is grayish brown to yellowish

brown sandy loam in the upper part and grayish brown gravelly sandy loam in the lower part. The substratum is grayish brown, mottled, gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Carbondale soils in bogs and Saprists and Aquents in areas that are inundated with water most of the year. Also included are some areas where the surface layer is mucky. Also included are well drained Bice soils on the lower hillsides and ridges.

The seasonal high water table in this Ensley soil is commonly between the surface and a depth of 1 foot from November through June. Many areas are ponded for brief periods in spring. Stones and a few boulders cover 0.1 to 3 percent of the surface. The rate of water movement through the soil is moderately rapid in the surface layer, moderate in the subsoil, and moderately rapid in the substratum. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is moderate. The surface layer is slightly acid to mildly alkaline.

Most areas of this soil are woodland. Some areas are in pasture or are reverting to brush. Some areas are in county and state forest tracts.

This soil is not suited to cultivated crops. Large stones and a few boulders on the surface and the prolonged seasonal high water table impede tillage.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

Large stones on the surface, the prolonged seasonal high water table, ponding, seepage, and potential frost action are limitations of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is VIIs.

FaB—Farmington loam, 0 to 8 percent slopes. This is a nearly level to gently sloping, shallow, well drained and somewhat excessively drained soil mainly in broad or oblong, undulating areas on upland till plains. Bedrock is at a depth of 10 to 20 inches. Areas range from 10 to 60 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil is dark yellowish brown to brown loam about 11 inches thick. Gray limestone bedrock is at a depth of 18 inches.

Included with this soil in mapping are small areas of moderately deep, well drained and moderately well drained Galway soils, shallow, somewhat excessively drained and excessively drained Benson soils, and very shallow, excessively drained and somewhat excessively drained Galoo soils on uplands. Also included are small, stony areas, clayey areas, sandy areas, and wet spots.

Bedrock in this Farmington soil is at a depth of 10 to 20 inches. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low. The surface layer is strongly acid to slightly acid.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland. A few areas are idle. A few wooded areas are stands of predominantly red cedar.

The soil is moderately suited to cultivated crops. Droughtiness is a limitation during the growing season. Row crops can be grown intensively. In the more sloping areas erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Depth to bedrock and droughtiness cause high seedling mortality and results in a moderate rate of uprooting of trees during windy periods.

Shallow depth to bedrock is a limitation of this soil for most urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

Fu—Fluvaquents-Udifluvents complex, frequently flooded. This map unit consists of nearly level to gently sloping, deep, well drained to very poorly drained soils adjacent to streams. These soils are subject to frequent flooding, which causes stream scour, lateral erosion, and shifting of soil deposits from place to place. Slope ranges from 0 to 8 percent, but is dominantly less than 3 percent. Most areas are long and narrow and adjacent to secondary streams. A few areas are wider and adjacent to larger streams and rivers. Areas range from 10 to 30 acres.

The soils in this unit have little or no soil profile development. The unit is about 45 percent Fluvaquents, 45 percent Udifluvents, and 10 percent other soils. Soil characteristics, including texture, gravel content, and drainage, differ so greatly within short distances that the soils could not be mapped separately at the scale selected for mapping.

Fluvaquents have a surface layer of dark brown to black very gravelly fine sand to silty clay about 5 to 9

inches thick. The substratum to a depth of 60 inches or more is mottled, dark gray or dark brown very gravelly sand to silty clay. These soils are somewhat poorly drained to very poorly drained.

Udifluvents have a surface layer of brownish or grayish very gravelly fine sand to silty clay loam about 14 inches thick. The substratum extends to a depth of 60 inches or more. In the upper part it is brown, olive brown, or strong brown sand to silty clay. Below that, it is stratified gravel and sand that has alternating lenses of silt. These soils are well drained or moderately well drained.

Included with this unit in mapping are small areas of well drained Hamlin soils, moderately well drained and somewhat poorly drained Teel soils, moderately well drained Podunk soils, and poorly drained to very poorly drained Wayland soils. Also included are small areas of rock outcrop.

Soil features important to use and management are highly variable within short distances. These include available water capacity, texture, small stone content, surface topography, rate of water movement through the soil, depth to the seasonal high water table, and soil reaction. Flooding and the variability of soil characteristics are serious problems for most uses of these soils.

Most areas of these soils are idle and support native grasses, brush, and a few trees, such as willow, alder, soft maple, and hemlock.

Some areas of these soils are used for permanent pasture. Reseeding, applying lime and fertilizers, and other pasture management practices are difficult because areas are generally inaccessible and are dissected by old stream channels.

Some areas of these soils provide suitable sites for ponds or the development of marshes for wetland wildlife. Onsite investigation is essential for any intended use.

The capability subclass is Vw.

GaA—Galen fine sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in smooth, broad, irregular areas on plains. Areas range from 5 to 20 acres.

Typically, the surface layer is dark brown fine sandy loam about 8 inches thick. The subsoil is about 32 inches thick. In the upper part it is yellowish brown very fine sandy loam to brown sandy loam. In the lower part it is mottled, brown and pale brown loamy fine sand that has horizontal bands of dark brown fine sandy loam to very fine sandy loam. The substratum is light yellowish brown and pale brown fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Arkport soils on knolls and somewhat poorly drained Minoa soils in low, flat areas. Also included, where the soils do not have horizontal, loamy bands in the subsoil, are small areas of moderately well drained Deerfield soils.

The seasonal high water table in this Galen soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate or moderately rapid in the surface layer and the subsoil and moderately rapid in the substratum. The capacity of the soil to store water available for plant growth is moderate. Runoff is slow. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for wet spots. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table, seepage, and rate of water movement through the substratum are limitations of this soil for many urban uses. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Potential frost action and the sandy texture in the lower part of the subsoil and the substratum cause this soil to be unstable for some construction uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

GaB—Galen fine sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil dominantly on medium slopes and partly on short, concave slopes on lowland plains. Areas range from 5 to 20 acres.

Typically, the surface layer is dark brown fine sandy loam about 8 inches thick. The subsoil is mottled in the lower part and about 32 inches thick. In the upper part it is yellowish brown very fine sandy loam to brown sandy loam. In the lower part it is brown and pale brown loamy fine sand that has horizontal bands of dark brown fine sandy loam to very fine sandy loam. The substratum is light yellowish brown and pale brown loamy fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Arkport soils on knolls and ridges and

somewhat poorly drained Minoa soils on foot slopes and in low, flat areas. Also included, where the soils do not have loamy, horizontal bands in the subsoil, are small areas of moderately well drained Deerfield soils.

The seasonal high water table in this Galen soil is commonly within a depth of 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate to moderately rapid in the surface layer and the subsoil and moderately rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops for dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or are idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for wet spots. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table, seepage, and rate of water movement through the substratum are limitations of this soil for many urban uses. On sites for sanitary facilities, seepage and inadequate filtration of the effluent cause ground water contamination. Potential frost action and the sandy texture in the lower part of the subsoil and the substratum cause this soil to be unstable for some construction uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIw.

GbB—Galoo-Rock outcrop complex, 0 to 8 percent slopes. This map unit consists of very shallow, excessively drained and somewhat excessively drained Galoo soils and areas of Rock outcrop. The Galoo soil is 2 to 10 inches deep over limestone or calcareous sandstone bedrock. Rock outcrop makes up 10 to 50 percent of most areas of the unit. Areas are mainly on undulating ridges and knolls. Areas range from 10 to more than 100 acres.

Typically, this unit is about 55 percent Galoo soils, 25 percent Rock outcrop, and 20 percent other soils. The Galoo soil and areas of Rock outcrop are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Galoo soil has a surface layer of dark brown silt loam about 4 inches thick. The subsoil is reddish brown channery silt loam to a depth of 7 inches. Gray limestone bedrock is at a depth of 7 inches.

Included with this unit in mapping are small areas of shallow, somewhat excessively drained Benson soils, shallow, well drained and somewhat excessively drained Farmington soils, and moderately deep, well drained and moderately well drained Galway soils. Also included are small areas that are very stony or that have short, steep slopes, small bedrock escarpments, and wet spots.

Bedrock in this Galoo soil is at a depth of less than 10 inches. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is very low. The surface layer is moderately acid to mildly alkaline.

Most areas of this Galoo soil are used as pasture, are reverting to brush, or are poor quality woodland.

This Galoo soil is not suited to cultivated crops because of very shallow depth to bedrock, droughtiness, and rock outcrops.

This Galoo soil is poorly suited to pasture. If used for pasture, it requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, restricted grazing during dry periods, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of the Galoo soil for red maple is moderate. Droughtiness, very shallow depth to bedrock, and rock outcrops in as much as 50 percent of an area cause high seedling mortality and restrict rooting depth, resulting in uprooting of trees during windy periods.

Very shallow depth to bedrock and rock outcrops are limitations of this soil as sites for sanitary facilities and for other urban uses (fig. 7). Potential for habitat for wildlife is poor.

The capability subclass is VIIs.

GcB—Galoo, acid-Rock outcrop complex, 0 to 8 percent slopes. This map unit consists of very shallow, excessively drained and somewhat excessively drained, acid Galoo soil and areas of Rock outcrop. The Galoo soil is 2 to 10 inches deep. Rock outcrop makes up 10 to 50 percent of most areas of the unit. It is mainly on undulating ridges and knolls underlain by bedrock. Areas range from 10 to 80 acres.

This unit is about 55 percent Galoo, acid, soil, 25 percent Rock outcrop, and 20 percent other soils. The Galoo soil and areas of Rock outcrop are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Galoo, acid, soil has a surface layer of dark brown silt loam about 4 inches thick. The subsoil is reddish brown channery silt loam to a depth of about 7

Figure 7.—Exposed ledges of hard limestone bedrock are common in areas of Galoo-Rock outcrop complex, 0 to 8 percent slopes. The bedrock is a limitation to most urban uses, such as roads, that require subsurface excavations.

inches. Bedrock of dolomitic sandstone and Theresa sandstone is at a depth of 7 inches. Typically, it is buff colored and the grains are cemented by carbonates.

Included with this unit in mapping are small areas of shallow, well drained and somewhat excessively drained Hollis soils, shallow, poorly drained and very poorly drained Ruse soils, and moderately deep, well drained and somewhat excessively drained Chatfield soils on ridges. Also included are small areas of moderately deep, somewhat poorly drained Chaumont soils between bedrock ridges and poorly drained and very poorly drained Guffin soils in depressions. Also included are small areas where stones and boulders are on the surface.

Bedrock in the Galoo, acid, soil is at a depth of less than 10 inches. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is very low. The surface layer is very strongly acid or strongly acid.

Most areas of the Galoo, acid, soil are in pasture, are reverting to brush, or are poor quality woodland.

The Galoo, acid, soil is not suited to cultivated crops because of very shallow depth to bedrock, rock outcrops, and droughtiness.

The Galoo, acid, soil is poorly suited to pasture. If used for pasture, it requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, restricted grazing during dry periods, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of the Galoo, acid, soil for red maple is moderate. Depth to bedrock, rock outcrops, and droughtiness cause high seedling mortality, and restricted rooting depth results in uprooting of trees during windy periods.

Depth to bedrock and rock outcrops are limitations of this soil as sites for sanitary facilities and for other urban uses. Potential for habitat for wildlife is poor.

The capability subclass is VIIs.

GlA—Galway silt loam, 0 to 3 percent slopes. This is a nearly level, moderately deep, well drained and

moderately well drained soil mainly in smooth, oblong, flat areas on uplands. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 80 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 14 inches thick. It is yellowish brown gravelly silt loam in the upper part, and mottled, dark grayish brown to brown gravelly loam in the lower part. The substratum is brown to grayish brown very gravelly loam to a depth of 36 inches. Gray limestone bedrock is at a depth of 36 inches.

Included with this soil in mapping are small areas of shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, somewhat poorly drained and poorly drained Newstead soils. Also included are small areas of very deep, well drained Nellis soils and very deep, moderately well drained Amenia soils. Also included are areas of Galway soils that have a channery or very channery surface layer. Also included are small areas of rock outcrops, bedrock escarpments stony areas, and wet areas.

The seasonal high water table in this Galway soil is commonly within 1 1/2 to 3 feet of the surface in March and April. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate. Runoff is slow. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. A few areas are used as pasture or woodland. A few areas are in urban use.

This soil is well suited to cultivated crops. It is somewhat droughty during the drier summer months. Row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock is a limitation to use of this soil as sites for sanitary facilities, shallow excavations, and dwellings with basements. Depth to bedrock is a limitation of this soil for local roads and streets. The thin layer of soil over bedrock is a limitation for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIs.

GlB—Galway silt loam, 3 to 8 percent slopes. This is a gently sloping, moderately deep, well drained and moderately well drained soil mainly in convex, sloping areas on uplands. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 80 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 14 inches thick. It is yellowish brown gravelly silt loam in the upper part and mottled, dark grayish brown and brown gravelly loam in the lower part. The substratum is brown and grayish brown very gravelly loam to a depth of 26 inches. Gray limestone bedrock is at a depth of 26 inches.

Included with this soil in mapping are small areas of shallow, well drained and somewhat excessively drained Farmington soils on knolls and moderately deep, somewhat poorly drained and poorly drained Newstead soils in low, flat areas. Also included are small areas of very deep, well drained Nellis soils and moderately well drained Amenia soils. Also included are Galway soils that have a channery and very channery surface layer. Also included are small areas of rock outcrops, bedrock escarpments, stony areas, and wet spots.

The seasonal high water table in this Galway soil is commonly within 1 1/2 to 3 feet of the surface layer in March and April. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. A few areas are used for pasture or woodland. A few areas are in urban use.

This soil is well suited to cultivated crops. It is somewhat droughty during the drier summer months. Row crops can be grown intensively, but erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming with strip crops on the contour on the longer slopes, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management limitations for woodland use.

Depth to bedrock is a limitation to use of this soil as sites for sanitary facilities, shallow excavations, and dwellings with basements. Depth to bedrock is a limitation of the soil for most other urban uses. Potential

frost action is a limitation for local roads and streets. A thin layer of soil over bedrock is a limitation for lawns and landscaping. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

GlC—Galway silt loam, 8 to 15 percent slopes. This is a sloping, moderately deep, well drained and moderately well drained soil mainly in convex, sloping areas on uplands. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 80 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 14 inches thick. It is dark yellowish brown gravelly silt loam in the upper part and mottled, dark grayish brown to brown gravelly loam in the lower part. The substratum is mottled, brown to grayish brown very gravelly loam to a depth of 26 inches. Gray limestone bedrock is at a depth of 26 inches.

Included with this soil in mapping are small areas of shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, somewhat poorly drained and poorly drained Newstead soils in low, flat areas. Also included are small areas of very deep, well drained Nellis soils and moderately well drained Amenia soils. Also included are Galway soils that have a channery and very channery surface layer. Also included are small areas of rock outcrops, bedrock escarpments, stony areas, and wet spots.

The seasonal high water table in this Galway soil is commonly within 1 1/2 to 3 feet of the surface in March and April. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate. Runoff is medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. A few areas are used for pasture or woodland. A few areas are in urban use.

This soil is moderately suited to cultivated crops. It is somewhat droughty during the growing season. Erosion is a severe hazard if slopes are bare of vegetation. Conservation tillage, contour farming on the short slopes, crop rotation with long-term hay crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

Depth to bedrock is a limitation to use of this soil as sites for sanitary facilities, shallow excavations, and dwellings with basements. Depth to bedrock and slope are limitations of this soil for most other urban uses. Slope and potential frost action are limitations for local streets and roads. Slope and a thin layer of soil over bedrock are limitations for lawns and landscaping and golf fairways. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

GmC—Galway very stony silt loam, 0 to 15 percent slopes. This is a nearly level to sloping, moderately deep, well drained soil mainly in broad, irregularly shaped, undulating and rolling areas on uplands. Bedrock is at a depth of 20 to 40 inches. Stones and boulders 5 to 25 feet apart cover 3 percent of the surface. Areas range from 20 to 100 acres or more.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 9 inches thick. The subsoil is about 14 inches thick. It is yellowish brown gravelly silt loam in the upper part and mottled, dark grayish brown to brown gravelly loam in the lower part. The substratum is brown to grayish brown very gravelly loam to a depth of 36 inches. Gray limestone bedrock is at a depth of 36 inches.

Included with this soil in mapping are a few areas of very stony, well drained Nellis soils, moderately well drained Amenia soils, and well drained Lowville soils. Also included are well drained Madrid soils, moderately deep, somewhat poorly drained and poorly drained Newstead soils, and deep, poorly drained and very poorly drained Sun soils. Also included are small areas of very stony, shallow, somewhat excessively drained and excessively drained Benson soils and very shallow, excessively drained and somewhat excessively drained Galoo soils.

The seasonal high water table in this Galway soil is commonly within 1 1/2 to 3 feet of the surface in March and April. Large stones and a few boulders are on the surface. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the surface layer is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate.

Most areas of this soil are permanent pasture or woodland or are idle. Some cleared areas that previously were used for pasture are planted to conifers.

This soil is not suited to cultivated crops because of large stones and a few boulders on the surface. If used for pasture, it requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock is a limitation to use of this soil as sites for sanitary facilities, shallow excavations, and dwellings with basements. Depth to bedrock, large stones on the surface, and slope are limitations to use of this soil for most other urban uses. Potential frost action is a limitation for local roads and streets. The thin layer of soil over bedrock is a limitation for lawns and landscaping. Potential for habitat areas is poor for openland wildlife and good for woodland wildlife.

The capability subclass is VIs.

Gr—Granby mucky loamy fine sand. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in smooth, nearly level to depressional areas on plains, and near drainageways. Areas range from 15 to more than 40 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark gray mucky loamy fine sand about 10 inches thick. The subsoil is mottled and about 28 inches thick. It is gray loamy fine sand in the upper part and dark grayish brown to grayish brown loamy fine sand in the lower part. The substratum is grayish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of poorly drained and somewhat poorly drained Junius soils and moderately well drained Deerfield soils on benches. Also included are small areas of soils that have a gravelly and cobbly substratum. Also included are small areas of somewhat poorly drained Minoa soils and poorly drained and very poorly drained Lamson soils.

This soil is ponded or the seasonal high water table is between the surface and a depth of 1 foot from November through June. The rate of water movement through the soil is rapid. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Many areas are used as pasture or woodland or are idle. A few wooded areas are predominantly white cedar stands. Some cleared areas have been drained and are used for cultivated crops. A few previously cleared areas have been reforested to white spruce.

This soil is poorly suited to cultivated crops. Drainage is needed if the soil is used for cultivated crops. Unless drained, most areas are better suited to long-term hay. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. Ponding limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

Ponding, rate of water movement through the soil, and the sandy texture are limitations to use of this soil for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Ponding and poor stability are also limitations for urban use. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

GtA—Groton gravelly loam, 0 to 3 percent slopes. This is a nearly level, very deep, excessively drained soil mainly in smooth, long, narrow or broad, irregularly shaped areas on the top of terraces and ridges. Areas range from 15 to 65 acres.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is about 11 inches thick. It is brown gravelly sandy loam in the upper part and dark yellowish brown gravelly sandy loam in the lower part. The substratum is brown to pale brown very gravelly sand and stratified gravel and sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained, sandy Windsor soils, poorly drained and somewhat poorly drained Junius soils, and poorly drained and very poorly drained Granby soils. Also included are small areas of moderately well drained Phelps soils on terraces and alluvial fans. Also included are small gravel pits and areas of soils that have steep slopes.

The rate of water movement through the Groton soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland or are in urban use. A few areas are idle. Some areas are used for retail vegetable and small fruit operations and small apple orchards.

This soil is moderately suited to cultivated crops. It is droughty during the growing season. If it is properly managed, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The sandy texture and droughty conditions during the growing season cause high seedling mortality.

Rate of water movement through the soil and the sandy texture are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can cause ground water contamination. The sandy texture and droughty conditions are limitations for shallow excavations and lawns and landscaping. There are few limitations for other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

GtB—Groton gravelly loam, 3 to 8 percent slopes. This is a gently sloping, very deep, excessively drained soil mainly in long, narrow or broad, irregularly shaped areas on the top of terraces and ridges. Areas range from 10 to 60 acres.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is about 11 inches thick. It is brown gravelly sandy loam in the upper part and dark yellowish brown gravelly sandy loam in the lower part. The substratum is brown to pale brown very gravelly sand and stratified gravel and sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained, sandy Windsor soils, poorly drained and somewhat poorly drained Junius soils, and very poorly drained Granby soils. Also included are small areas of moderately well drained Phelps soils on terraces and alluvial fans. Also included are small gravel pits and areas of soils that have steep slopes.

The rate of water movement through the Groton soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland or are in urban use. A few areas are idle. Some areas are used for retail vegetable and small fruit operations and small apple orchards.

This soil is moderately suited to cultivated crops. It is droughty during the growing season. If it is properly managed, row crops can be grown intensively. Wind and water erosion is a slight hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The sandy texture and droughty conditions during the growing season cause high seedling mortality.

Rate of water movement through the soil and the sandy texture are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. The sandy texture and droughty conditions are limitations for shallow excavations and lawns and landscaping. There are few limitations for other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

GtC—Groton gravelly loam, 8 to 15 percent slopes. This is a sloping, very deep, excessively drained soil mainly on long, narrow, low-lying hills and ridges. Areas range from 10 to 50 acres.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is about 11 inches thick. It is brown gravelly sandy loam in the upper part and dark yellowish brown gravelly sandy loam in the lower part. The substratum is brown to pale brown very gravelly sand and stratified gravel and sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained, sandy, Windsor soils, poorly drained and somewhat poorly drained Junius soils, and poorly drained and very poorly drained Granby soils. Also included are small areas of moderately well drained Phelps soils on terraces and alluvial fans. Also included are small gravel pits.

The rate of water movement through the Groton soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland or are in urban use. A few areas are idle.

This soil is poorly suited to cultivated crops. It is droughty during the growing season. Wind and water erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation with long-term hay crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices

are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The sandy texture and droughty conditions during the growing season cause high seedling mortality.

Rate of water movement through this soil and the sandy texture are limitations to use of the soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. The sand texture and droughty conditions are limitations for shallow excavations and lawns and landscaping. Slope is the main limitation for other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IVs.

GtD—Groton gravelly loam, 15 to 25 percent slopes. This is a moderately steep, very deep, excessively drained soil mainly on the sides of low hills, ridges, and terraces. Areas range from 15 to 35 acres.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is about 11 inches thick. It is brown gravelly sandy loam in the upper part and dark yellowish brown gravelly sandy loam in the lower part. The substratum is brown to pale brown very gravelly sand and stratified gravel and sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of excessively drained Windsor soils in sandy beach deposits and small areas of moderately well drained Phelps soils on terraces and alluvial fans. Also included, in steep and very steep areas, are small areas of Bonaparte soils. Also included are small gravel pits.

The rate of water movement through this Groton soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for pasture. Some areas are woodland. A few areas are idle. Some areas that previously were used for pasture or were idle have been planted to conifers.

In most areas this soil is not suited to cultivated crops because of slope and droughtiness. Wind and water erosion is a very serious hazard if slopes are bare of vegetation. Long-term hay crops and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. Slope limits equipment use. The sandy texture and droughty conditions cause high seedling mortality.

Slope, rate of water movement through the soil, and the sandy texture are limitations of this soil for most urban uses. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIs.

GtE—Groton gravelly loam, 25 to 35 percent slopes. This is a steep and very steep, very deep, excessively drained soil mainly on the sides and fronts of hills, ridges, and terraces. Areas range from 15 to 35 acres.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is about 11 inches thick. It is brown gravelly sandy loam in the upper part and dark yellowish brown gravelly sandy loam in the lower part. The substratum is brown to pale brown very gravelly sand and stratified gravel and sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of sandy, excessively drained Windsor and Plainfield soils. Also included are small areas of Bonaparte soils and areas of Groton soils on gentler slopes. Also included are small gravel pits.

The rate of water movement through this Groton soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Most areas of this soil are woodland or permanent pasture. Some areas are idle. Some areas that were previously used for pasture or were idle have been planted to conifers.

This soil is not suited to cultivated crops because of slope. Droughtiness during the growing season is a limitation. Wind and water erosion is a very serious hazard if slopes are bare of vegetation. A permanent cover of grass or trees is effective in controlling erosion.

If used for permanent pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control wind and water erosion.

Potential productivity of this soil for sugar maple is moderate. Slope limits equipment use. The sand texture and droughty conditions cause high seedling mortality.

Slope, rate of water movement through the soil, and the sandy texture are limitations of this soil for most urban uses. Seepage and inadequate filtration of the effluent can result in ground water contamination.

Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIIs.

GuB—Groton Variant gravelly loam, 0 to 8 percent slopes. This is a nearly level or gently sloping, moderately deep, excessively drained soil mainly in oblong, undulating areas. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown gravelly loam about 7 inches thick. The subsoil is about 6 inches thick. It is reddish brown gravelly sandy loam in the upper part and dark reddish brown very gravelly sandy loam in the lower part. The substratum is pale brown very gravelly sand to a depth of 39 inches. Hard, gray limestone bedrock is at a depth of 39 inches.

Included with this soil in mapping are small areas of deep, moderately well drained Phelps soils. Also included are moderately deep, well drained and moderately well drained Galway soils and very shallow, excessively drained and somewhat excessively drained Galoo soils. Also included are small gravel pits.

The rate of water movement through this Groton Variant soil is moderately rapid in the surface layer and the subsoil and rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer is neutral or moderately alkaline.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland. A few areas are idle.

This soil is moderately suited to cultivated crops. It is droughty during the growing season. If the soil is properly managed, row crops can be grown intensively. Wind and water erosion is a slight hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, growing winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The sand texture and droughty conditions during the growing season cause high seedling mortality.

Depth to bedrock, rate of water movement through the soil, and the sandy texture are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Depth to bedrock, the sandy texture, and droughty conditions are limitations for shallow excavations and lawns and landscaping. Depth to bedrock is a limitation for other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

Gv—Guffin clay. This is a nearly level, moderately deep, poorly drained and very poorly drained soil mainly in irregularly shaped flats and in small, round, marsh-like depressions. Bedrock is at a depth of 20 to 40 inches. Areas range from 5 to 30 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark gray clay about 7 inches thick. The subsoil is mottled and about 15 inches thick. It is firm, sticky and very plastic, dark grayish brown to grayish brown clay. Massive, level-bedded, limestone bedrock is at a depth of 22 inches.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils. Also included are small areas of deep, somewhat poorly drained Kingsbury soils, poorly drained Covington soils, and very poorly drained Livingston soils on plains. Also included are moderately deep soils that are similar to Rhinebeck and Madalin soils. Also included are small areas of rock outcrop and bedrock escarpments.

The seasonal high water table in this Guffin soil is commonly between the surface and a depth of 6 inches from December through May. Bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is slow or very slow. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil are used as pasture or woodland or are idle. Some wooded areas are predominantly stands of red cedar. A few cleared and drained areas are used for cultivated crops. A few previously cleared areas have been reforested to white spruce.

This soil is poorly suited to cultivated crops. Drainage is needed if the soil is used for cultivated crops. Most areas are better suited to long-term hay. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. Wetness limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, depth to bedrock, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action

are limitations of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

Gw—Gulf silt loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in smooth, nearly flat areas or in depressions. Areas range from 10 to 65 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark gray silt loam about 7 inches thick. The subsoil is mottled and about 19 inches thick. It is grayish brown silt loam in the upper part and pale brown clay loam in the lower part. The substratum is mottled, dark grayish brown and grayish brown gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained and moderately well drained Haights soils and well drained Lagross soils on knolls and benches. Also included are small areas of gently sloping soils, small stony areas, and marshes.

The seasonal high water table in this Gulf soil is commonly between the surface and a depth of 6 inches from November through June. The rate of water movement through the soil is moderate. Runoff is very slow. The capacity of the soil to store water available for plant growth is moderate to high. The surface layer is strongly acid to neutral.

Most areas of this soil are idle or reverting to brush. Some areas are used as pasture or woodland.

This soil is poorly suited to cultivated crops. The main limitation is the prolonged seasonal high water table. Drainage is needed if the soil is used for cultivated crops. Conservation tillage in drained areas, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table and potential frost action are limitations of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IIIw.

HaB—Haights-Gulf silt loams, undulating. This map unit consists of level, very deep, well drained and moderately well drained soil and poorly drained and very poorly drained soil. Areas are mainly in undulating areas and in depressions on uplands. They range from 10 to 30 acres. Slope ranges from 0 to 8 percent.

This unit is about 55 percent Haights soil, 35 percent Gulf soil, and 10 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Haights soil has a surface layer of very dark grayish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. It is dark brown silt loam in the upper part and dark yellowish brown to brown shaly silt loam to shaly loam in the lower part. The substratum extends to a depth of 60 inches or more. It is grayish brown shaly loam that has thin lenses of gravel and sand and small pockets of fine sand.

Typically, the Gulf soil has a surface layer of very dark gray silt loam about 7 inches thick. The subsoil is mottled and about 19 inches thick. It is grayish brown silt loam in the upper part and pale brown clay loam in the lower part. The substratum is mottled, dark grayish brown to grayish brown gravelly loam to a depth of 60 inches or more.

Included with this unit in mapping are small areas of well drained Lagross soils on terraces and fans. Also included are small areas of well drained Bice soils on low-lying hills and ridges.

The seasonal high water table in the Haights soils is commonly between 2 and 3 feet of the surface from February through April. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high.

The seasonal high water table in the Gulf soil is commonly between the surface and a depth of one-half foot from November through June. The rate of water movement through the soil is moderate. Runoff is very slow. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to neutral.

Most areas of the soils in this unit are used as woodland or are reverting to brush. Some areas are in pasture. A few areas are in cultivated crops.

These soils are moderately suited or poorly suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. If the soils are used for cultivated crops, drainage is needed on the Gulf soil. On the Haights soil, the seasonal high water table can somewhat delay planting and harvesting of crops. These soils are best suited to crop rotations with long-term, water-tolerant hay or sod crops. Using winter cover crops and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for sugar maple on the Haights soil and for red maple on the Gulf soil is moderate. On the Gulf soil, the seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, which results in uprooting of trees during windy periods.

The seasonal high water table is a limitation to use of these soils as sites for sanitary facilities. On the Gulf soils, the prolonged seasonal high water table and potential frost action are limitations for most other urban uses. On the Haights soil, the seasonal high water table is a limitation for shallow excavations, dwellings with basements, and most other urban uses. Potential for habitat for openland and woodland wildlife is good on the Haights soil and for wetland wildlife is good on the Gulf soil.

The capability subclass is IIIw.

Hb—Halsey mucky loam. This is a nearly level, very deep, very poorly drained soil mainly in depressions on plains and terraces. Areas range from 5 to 50 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is covered by a thin organic layer about 2 inches thick. The surface layer is black mucky loam to dark grayish brown loam about 11 inches thick. The subsoil is mottled and about 19 inches thick. It is grayish brown, dark gray, and olive gray loam and sandy loam. The substratum is mottled, dark gray and olive gray gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Phelps soils on knolls and benches. Also included are small areas of soils that are similar to the Halsey soil but that are somewhat poorly drained and poorly drained.

The seasonal high water table in this Halsey soil is commonly between the surface and a depth of one-half foot from September through June. The rate of water movement through the soil is moderate in the surface layer, moderate or moderately rapid in the subsoil, and rapid in the sand and gravel substratum. Runoff is slow or very slow. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is moderately acid to neutral.

Most areas of this soil are used as unimproved pasture or woodland or are idle. A few areas are in cultivated crops.

Unless drained, this soil is not suited to cultivated crops. It is generally not feasible to drain because suitable outlets are not available.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, rate of water movement through the substratum, seepage, and the sandy texture in the substratum are limitations of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability, the prolonged seasonal high water table, and potential frost action are limitations for other urban uses. The potential for habitat for wetland wildlife is good.

The capability subclass is Vw.

Hc—Hamlin silt loam. This is a nearly level, very deep, well drained soil mainly in smooth, long, narrow areas on the higher parts of flood plains. Areas range from 5 to 20 acres. Slope ranges from 0 to 3 percent, but is dominantly 1 or 0 percent.

Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is brown silt loam about 22 inches thick. The substratum is dark grayish brown heavy silt loam to gray gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping, in low-lying areas on flood plains, are small areas of poorly drained and very poorly drained Wayland soils and moderately well drained and somewhat poorly drained Teel soils. Also included, where the soils have a high content of shale fragments, are small areas of well drained Blasdell soils.

The seasonal high water table in this Hamlin soil is commonly within 3 to 6 feet of the surface from November through May. The soil is subject to occasional flooding. The rate of water movement through the soil is moderate. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is slightly acid or neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. A few areas are used as pasture or woodland.

This soil is very well suited to cultivated crops. If it is properly managed, row crops can be grown continuously. Conservation tillage, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. Flood control is needed.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

Occasional flooding and the seasonal high water table are limitations to use of this soil as sites for sanitary facilities and many other urban uses. Flooding and potential frost action are limitations for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability class is I.

HeB—Heuvelton silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly on convex slopes or in broad, irregularly shaped, undulating areas on plains. Areas range from 3 to 100 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is grayish brown silt loam about 4 inches thick. The subsoil is mottled below a depth of 18 inches and is about 23 inches thick. It is brown silty clay loam in the upper part and brown to dark yellowish brown silty clay in the lower part. The substratum is mottled and extends to a depth of 60 inches or more. It is brown silty clay varved with silt and very fine sand.

Included with this soil in mapping are small areas of somewhat poorly drained Muskellunge soils in nearly level areas. Also included are small wet spots and sand spots.

The seasonal high water table is commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soil is moderate or moderately slow in the surface layer and the subsoil and slow or very slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to neutral.

Most cleared areas of this soil are used for row crops in dairy farming. Some areas are in pasture. Other areas are used as woodland or are reverting to brush.

This soil is well suited to cultivated crops. The climate is cool and the growing season is short. In spring the seasonal high water table can delay tillage. Land smoothing and surface drainage with suitable outlets are effective in draining the soil for cultivated crops. Plowing in fall is common. Erosion is a serious hazard if slopes are bare of vegetation. Contour farming, crop rotation, using cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the substratum are limitations to use of this soil as sites for septic tank absorption fields. The seasonal high water table and the clayey texture are limitations for trench or area landfills. Shrinking and swelling and the seasonal high water table are limitations for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

HeC—Heuvelton silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly on narrow, convex, sloping ridges on plains. Areas range from 15 to 60 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is grayish brown silt loam about 4 inches thick. The subsoil is mottled below a depth of 18 inches and is about 23 inches thick. It is brown silty clay loam in the upper part and brown to dark yellowish brown silty clay in the lower part. The substratum extends to a depth of 60 inches or more. It is mottled brown silty clay varved with silt and very fine sand.

Included with this soil in mapping are small areas of somewhat poorly drained Muskellunge soils on foot slopes. Also included are small wet spots and sand spots.

The seasonal high water table in this Heuvelton soil is commonly within 1 1/2 to 2 feet of the surface layer from November through April. The rate of water movement through the soil is moderate or moderately slow in the surface layer and the subsoil and slow or very slow in the substratum. Runoff is slow or moderate. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to neutral.

Most cleared areas of this soil are used for cultivated crops in dairy farming. Some areas are in pasture. Other areas are used as woodland or are reverting to brush.

This soil is moderately suited to cultivated crops. However, the climate is cool and the growing season is short. Erosion is a very serious hazard if slopes are bare of vegetation. If the soil is used for cultivated crops, field strips or stripcropping is needed to control erosion. Crop rotation with longer periods of hay crops or sod, using cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple and other suitable timber species is moderate. Erosion is a moderate hazard on trails and in clear-cut areas.

The seasonal high water table and rate of water movement through the substratum are limitations to use of this soil as sites for septic tank absorption fields. The seasonal high water table and the clayey texture are limitations for trench landfills. The seasonal high water table and slope are limitations for shallow excavations and dwellings with basements. Shrinking and swelling, slope, and the seasonal high water table are limitations for dwellings without basements and small commercial buildings. Potential frost action and low soil strength are limitations for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

HmB—Heuvelton-Millsite-Rock outcrop complex, undulating. This map unit consists of very deep, moderately well drained Heuvelton soil, moderately deep, well drained and somewhat excessively drained Millsite soil, and areas of Rock outcrop. Areas of these soils and Rock outcrop are mainly on groups of ridges and knobs underlain by bedrock on an otherwise, relatively level plain. The Heuvelton soil is mainly between ridges and knobs and partly lies in grooves and troughs within ridges and knobs. The Millsite soil lies mainly on the sides and tops of ridges and knobs intermingled with Rock outcrop. The ridges and knobs, commonly broad and lobate, are generally oriented NNE-SSW. Areas are 25 to 100 acres or more. Slope ranges from 2 to 6 percent.

This unit is about 40 percent Heuvelton soil, 25 percent Millsite soil, 15 percent Rock outcrop, and 20 percent other soils. These soils and areas of Rock outcrop are in such an intricate pattern on the landscape that they could not be mapped separately at the scale selected for mapping.

Typically, the surface layer of the Heuvelton soil is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is grayish brown silt loam about 4 inches thick. The subsoil is mottled below a depth of 18 inches and is 23 inches thick. It is brown silty clay loam in the upper part and brown to dark yellowish brown silty clay in the lower part. The substratum extends to a depth of 60 inches or more. It is mottled, brown silty clay varved with silt and very fine sand.

Typically, the surface layer of the Millsite soil is very dark grayish brown loam about 6 inches thick. The subsoil is about 14 inches thick. It is brown loam in the upper part and brown gravelly loam in the lower part. The substratum is yellowish brown gravelly loam to a depth of about 28 inches. Gneiss bedrock is at a depth of 28 inches.

Typically, Rock outcrop consists of exposures of mainly granite, gneiss, or sandstone and, in some places, partly marble.

Included with this unit in mapping are small areas of shallow, well drained Insula soils, very shallow, somewhat excessively drained Quetico soils, and deep, well drained Bice soils. Also included, in flat or depressional areas near the tops of ridges, are small areas of shallow, poorly drained and very poorly drained Ruse soils. Intermingled mainly with the Heuvelton soils are included areas of moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils. Also included, in low depressions, are deep, poorly drained and very poorly drained Madalin soils and very poorly drained Livingston soils.

The seasonal high water table in the Heuvelton soil is commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soil is moderately slow or moderate in the surface layer and the subsoil and slow or very slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate or high. The surface layer is strongly acid to neutral.

Depth to bedrock in the Millsite soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer ranges from very strongly acid to slightly acid.

Most areas of these soils are used as permanent pasture or woodland or are reverting to brush. Some areas are idle. Some areas are federal land, mainly Fort Drum Military Reservation.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. The ridges and the knobs of bedrock are limitations in forestry management. There are few or no major management concerns for woodland use.

The seasonal high water table and the clayey texture on both soils and rate of water movement through the Heuvelton soil are limitations to use as sites for septic tank absorption fields and trench landfills. On the Millsite soil, depth to bedrock, seepage, and the association of ridges and bedrock-cored knobs are limitations for sanitary facilities. The seasonal high water table in the Heuvelton soil, depth to bedrock in the Millsite soil, and rock outcrops are limitations for shallow excavations and dwellings with basements. Slope and potential frost action on both soils, shrinking and swelling and low soil strength on the Heuvelton soil, and droughty conditions on the Millsite soil are limitations for other urban uses. Potential for habitat for openland wildlife is good and for woodland wildlife is good on the Heuvelton soil and fair on the Millsite soil.

The capability subclass is VIs.

HnB—Hinckley gravelly sandy loam, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, excessively drained soil mainly in undulating areas on top of terraces and benches in valleys and on nearly flat plains. Areas range from 15 to 60 acres.

Typically, the surface layer is dark brown gravelly sandy loam about 6 inches thick. The subsoil is about 14 inches thick. It is strong brown very gravelly loamy fine sand in the upper part and brown very gravelly loamy sand in the lower part. The substratum is yellowish brown very gravelly loamy sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat excessively drained Hoosic and Hinckley soils in sloping areas. Also included are small gravel pits, stony areas, and wet spots.

The rate of water movement through this Hinckley soil is rapid in the surface layer and the subsoil and very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low or very low. The surface layer is extremely acid to moderately acid.

Most areas of this soil are under federal and state ownership. Some areas are used as pasture or woodland. Some areas are idle. A few areas are used for cultivated crops. Some previously cleared areas are planted to conifers.

This soil is moderately suited to cultivated crops. Droughtiness is a problem during the growing season. Wind and water erosion is a slight hazard if the more sloping areas are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion in the more sloping areas.

Potential productivity of this soil for eastern white pine is high. The sandy texture and droughty conditions causes high seedling mortality.

Rate of water movement through the soil and the sandy texture are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Also, poor stability is limitation for shallow excavations. Small stones and droughty conditions are limitations for lawns and landscaping. There are few problems for other urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IIIs.

HoB—Hinckley-Hoosic cobbly sandy loams, 0 to 8 percent slopes. This map unit consists of nearly level to gently sloping, very deep, somewhat excessively drained and excessively drained soil mainly in broad, undulating areas on the top of terraces and plains. The content of gravel and cobblestones is high. Areas range from 15 to 50 acres.

This unit consists of about 65 percent Hinckley soils, 25 percent Hoosic soils, and 10 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Hinckley soil has a surface layer of dark brown cobbly sandy loam about 6 inches thick. The subsoil is about 14 inches thick. It is strong brown very gravelly loamy fine sand in the upper part and brown very gravelly loamy sand in the lower part. The substratum is yellowish brown very gravelly loamy sand to a depth of 60 inches or more.

Typically, the Hoosic soil has a surface layer of dark brown cobbly sandy loam about 6 inches thick. The subsurface layer is light brown cobbly fine sandy loam about 2 inches thick. The subsoil is strong brown very gravelly sandy loam about 6 inches thick. The substratum is yellowish brown very gravelly loamy sand and brown, stratified, very gravelly sand.

Included with this unit in mapping are small areas of excessively drained, sandy Windsor soils and well drained Arkport soils. Also included are small areas of moderately well drained Claverack and Elmridge soils that are underlain by clay. Also included are small sand pits and gravel pits.

The rate of water movement through the Hinckley soil is rapid in the surface layer and the subsoil and very rapid in the substratum. The rate through the Hoosic soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. On both soils runoff is slow. The capacity of these soils to store water available for plant growth is low or very low. The surface layer is extremely acid to moderately acid in the Hinckley soil and very strongly acid or strongly acid in the Hoosic soil.

Most areas of these soils are under federal and state land ownership. Some areas are used as pasture or woodland. Some areas are idle. Only a few areas are used for cultivated crops. Some previously cleared areas are planted to conifers. A few areas are used in commercial sand and gravel operations.

These soils are poorly suited to cultivated crops. They are droughty during the growing season. Cobbles or small stones in the surface layer limits cultivation and harvesting of crops. Wind and water erosion is a slight hazard if the soil is bare of vegetation. Conservation tillage is suitable for cultivated crops. Contour farming,

crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity for northern red oak on the Hinckley soil and for sugar maple on the Hoosic soil is moderate. On the Hinckley soil, the sandy texture and droughty conditions cause high seedling mortality. On the Hoosic soil, there are no major management concerns.

Rate of water movement through the soils and the sandy texture are limitations to use of these soils as sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. There are limitations for shallow excavations because cut banks cave. Small stones and droughty conditions are limitations for lawns and landscaping. There are few problems for other urban uses. Potential for habitat for openland and woodland wildlife is mostly poor.

The capability subclass is IVs.

HoE—Hinckley-Hoosic cobbly sandy loams, 15 to 35 percent slopes. This map unit consists of moderately steep and steep, very deep, somewhat excessively drained and excessively drained soils mainly in long and narrow areas on the steeper sides of terraces and on low, rounded hills. The content of gravel and cobbles is high. Areas range from 10 to 60 acres.

This unit is about 65 percent Hinckley soil, 25 percent Hoosic soil, and 10 percent other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Hinckley soil has a surface layer of dark brown, cobbly sandy loam about 6 inches thick. The subsoil is about 14 inches thick. It is strong brown very gravelly loamy fine sand in the upper part and brown very gravelly loamy sand in the lower part. The substratum is yellowish brown very gravelly loamy sand to a depth of 60 inches or more.

Typically, the Hoosic soil has a surface layer of dark brown cobbly sandy loam about 6 inches thick. The subsurface layer is light brown cobbly fine sandy loam about 2 inches thick. The subsoil is brown very gravelly sandy loam about 6 inches thick. The substratum is yellowish brown very gravelly loamy sand and brown, stratified, very gravelly sand.

Included with this unit in mapping are small areas of excessively drained, sandy Windsor soils and well drained Arkport soils. Also included are small sand pits and gravel pits.

The rate of water movement through the Hinckley soil is rapid in the surface layer and the subsoil and very rapid in the substratum. The rate through the Hoosic soil is moderately rapid or rapid in the surface layer and the subsoil and very rapid in the substratum. On both soils runoff is medium. The capacity of these soils to store water available for plant growth is low or very low. The surface layer is extremely acid to moderately acid in the Hinckley soil and very strongly acid to strongly acid in the Hoosic soil.

Most areas of these soils are under federal and state land ownership. Some areas are used as pasture or woodland. Some areas are idle. Some of the previously cleared areas are planted to conifers. A few areas are used in commercial sand and gravel pit operations.

These soils are not suited to cultivated crops because of slope. They are droughty during the growing season. Wind and water erosion is a moderate hazard if the soils are bare of vegetation. If used for pasture, permanent sod crops are needed to help to control erosion.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity for northern red oak on the Hinckley soil and for sugar maple on the Hoosic soil is moderate. Slope limits equipment use. On the Hinckley soil, sandy texture and droughty conditions cause high seedling mortality.

Slope, rate of water movement through the soils, and the sandy texture are limitations to use of these soils as sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Slope is a limitation for other urban uses. Poor stability is a limitation for shallow excavations. Small stones and droughty conditions are limitations for lawns and landscaping. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIIs.

HpB—Hollis-Galoo, acid, complex, rocky, 0 to 8 percent slopes. This map unit consists of nearly level and gently sloping, shallow and very shallow, well drained to excessively drained soils in mostly flat to undulating areas on the tops of terraces and plains. Rock outcrops make up 0.1 to 2 percent of most areas. Areas range from 15 to 100 acres or more.

This unit is about 45 percent shallow Hollis soil, 45 percent very shallow Galoo, acid, soil, and 10 percent areas of rock outcrops and other soils. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the surface layer of the Hollis soil is covered by a thin, organic layer. The surface layer is very dark brown fine sandy loam about 4 inches thick. The subsoil is brown to dark yellowish brown gravelly fine sandy

loam to a depth of about 16 inches. Potsdam sandstone and dolomite bedrock is at a depth of 16 inches.

Typically, the Galoo, acid, soil has a surface layer of dark brown silt loam about 4 inches thick. The subsoil is reddish brown channery silt loam to a depth of about 7 inches. Dolomite or Theresa sandstone bedrock is at a depth of 7 inches.

Included with this soil complex in mapping are small areas of moderately deep, well drained and somewhat excessively drained Chatfield soils, and shallow, poorly drained and very poorly drained Ruse soils on flats and in depressions. Also included are small areas where stones and boulders are on the surface, sand spots, and clay spots.

Depth to bedrock is 10 to 20 inches in the Hollis soil and less than 10 inches in the Galoo, acid, soil. Runoff is medium or slow, depending on relief. The capacity of these soils to store water available for plant growth is very low. The surface layer ranges from very strongly acid to moderately acid in the Hollis soil and is very strongly acid or strongly acid in the Galoo soil.

Most areas are used for permanent pasture. Some areas are used as woodland or are reverting to brush. Some areas are idle. A few areas are used for cultivated crops.

These soils are poorly suited to cultivated crops because of depth to bedrock and rock outcrops. Erosion is a slight hazard if slopes are bare of vegetation. Long-term hay or sod crops are effective in controlling erosion. If the soils are used for cultivated crops, using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter, to control erosion, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity is moderate for northern red oak on the Hollis soil and for red maple on the Galoo, acid, soil. Depth to bedrock and rock outcrops cause moderate seedling mortality and restrict rooting depth, resulting in a moderate rate of uprooting of trees during windy periods on the Hollis soil and a high rate on the Galoo, acid, soil.

Depth to bedrock, rock outcrops, and seepage are limitations of these soils for urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IVs.

HrB—Hollis-Rock outcrop complex, 0 to 8 percent slopes. This map unit consists of shallow, well drained and somewhat excessively drained Hollis soil and areas of Rock outcrop. The Hollis soil makes up about 50 percent of the unit, Rock outcrop makes up about 30 percent, and other soils make up 20 percent. Areas of this soil and Rock outcrop are undulating or flat and on the tops of terraces, and on plains. Areas range from 15 to 80 acres or more.

Typically, the surface layer of the Hollis soil is covered by a thin, organic layer. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is brown to dark yellowish brown gravelly fine sandy loam to a depth of 16 inches. Potsdam sandstone and dolomite bedrock is at a depth of 16 inches or more.

Typically, Rock outcrop consists of areas of exposed sandstone and dolomite. The sandstone is poorly cemented and buff colored. The dolomite is made up of magnesium carbonate.

Included in mapping are small areas of very shallow, somewhat excessively drained Galoo soils, moderately deep, well drained and somewhat excessively drained Chatfield soils, and in low, flat areas, shallow, poorly drained and very poorly drained Ruse soils. Also included, in clayey deposits between bedrock ridges, are small areas of moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils in depressions. Also included are small areas where stones and boulders are on the surface and areas of steep slopes.

Bedrock in the Hollis soil is at a depth of 10 to 20 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is very low. The surface layer ranges from very strongly acid to moderately acid.

Most areas of the Hollis soil is in permanent pasture. Some areas are used as woodland or are reverting to brush. Some areas are idle.

The Hollis soil is not suitable for farming because of rock outcrop and shallow depth to bedrock. Erosion is a moderate hazard if slopes are bare of vegetation.

The Hollis soil is suitable for pasture. If used for pasture, it requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of the Hollis soil for northern red oak is moderate. Shallow depth to bedrock causes moderate seedling mortality and restricts rooting depth, resulting in uprooting of trees during windy periods.

Shallow depth to bedrock, rock outcrops, and seepage are limitations of this Hollis soil for urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIs.

HuB—Hudson silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in smooth, irregularly shaped areas and on convex slopes. Areas range from 3 to 100 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsurface layer is mottled, brown silt

loam about 4 inches thick. The subsoil is mottled and about 47 inches thick. It is brown to dark brown silty clay loam in the upper part, brown silty clay in the middle part, and yellowish brown silt loam in the lower part. The substratum is mottled, brown silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Rhinebeck soils in nearly level and concave, sloping areas and very poorly drained Madalin soils in depressions. Also included are small wet spots and sand spots.

The seasonal high water table in this Hudson soil is commonly within 1 1/2 to 2 feet of the surface layer from November through April. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are highly productive woodlots and sugarbushes. Some areas are in urban use.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Land smoothing and surface drainage with suitable outlets are effective in draining this soil for cultivated crops. Plowing in fall is common. Erosion is a serious hazard if slopes are bare of vegetation. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking areas, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorption fields. The seasonal high water table and the clayey texture are limitations for trench landfills and area landfills. The seasonal high water table is a limitation for shallow excavations and dwellings with basements. Shrinking and swelling and the seasonal high water table are limitations for dwellings without basements and small commercial buildings. Potential frost action and low soil strength are limitations for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

HuC—Hudson silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly in long and narrow, or irregularly shaped areas, and on convex slopes. Areas range from 15 to 60 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsurface layer is mottled, brown silt loam about 4 inches thick. The subsoil is mottled and about 47 inches thick. It is brown to dark brown silty clay loam in the upper part, brown silty clay in the middle part, and yellowish brown silt loam in the lower part. The substratum is mottled, brown silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Rhinebeck soils on foot slopes. Also included are small wet spots and sand spots.

The seasonal high water table in this Hudson soil are commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are in highly productive woodlots and in sugar bushes. Some areas are in urban uses.

This soil is moderately suited to cultivated crops. Erosion is a very serious hazard if slopes are bare of vegetation. Contour farming and field strips or strip cropping help to control erosion. Crop rotation with long-term hay crops or sod, using cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for northern red oak is moderately high. Erosion is a moderate hazard.

The seasonal high water table and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorption fields. The seasonal high water table and the clayey texture are limitations for trench landfills. The seasonal high table and slope are limitations for area landfills. The seasonal high water table is a limitation for shallow excavations and dwellings with basements.

Shrinking and swelling, slope, and the seasonal high water table are limitations for dwellings without basements and small commercial buildings. Potential frost action and low soil strength are limitations for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIIe.

HvB—Hudson-Chatfield-Rock outcrop complex, undulating. This map unit consists of very deep, moderately well drained Hudson soil, moderately deep, well drained and somewhat excessively drained Chatfield soil, and areas of Rock outcrop. Areas of these soils and Rock outcrop consist mainly of groups of ridges and knobs underlain by bedrock within otherwise a nearly level plain. The Hudson soil is mainly between ridges and knobs and partly lies in grooves and troughs within ridges and knobs. The Chatfield soil lies mainly on the sides and tops of ridges and knobs intermingled with Rock outcrop. The ridges and knobs, commonly broad and lobate, are generally oriented NNE-SSW. Areas are 25 to 100 acres or more. Slope ranges from 3 to 8 percent.

This unit is about 40 percent Hudson soil, 25 percent Chatfield soil, 15 percent Rock outcrop, and 20 percent other soils. These soils and areas of Rock outcrop are in such an intricate pattern on the landscape that they could not be mapped separately at the scale selected for mapping.

Typically, the surface layer of the Hudson soil is brown silt loam about 8 inches thick. The subsurface layer is mottled, brown silt loam about 4 inches thick. The subsoil is mottled and about 47 inches thick. It is brown to dark brown silty clay in the upper part, brown silty clay in the middle part, and yellowish brown silt loam in the lower part. The substratum is mottled, brown silty clay to a depth of 60 inches or more.

Typically, the surface layer of the Chatfield soil is a dark brown loam about 4 inches thick. The subsoil is dark brown to yellowish brown loam about 16 inches thick. The substratum is brown sandy loam to a depth of 30 inches. Granite bedrock is at a depth of 30 inches or more.

Typically, Rock outcrop consists of areas of exposed granite, gneiss, or sandstone bedrock.

Included with these soils in mapping are small areas of shallow, well drained and somewhat excessively drained Hollis soils, very shallow, excessively drained and somewhat excessively drained Galoo, acid, soils, and deep, well drained Bice soils. Also included, in flat or depressional areas on the tops of ridges, are small areas of shallow, poorly drained and very poorly drained Ruse soils. Intermingled mainly with deep, well drained Hudson soils and commonly in line with the long axis of ridges and knobs are included areas of moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils. Also included, in low depressions, are deep, poorly drained and very poorly drained Madalin soils and very poorly drained Livingston soils.

The seasonal high water table in the Hudson soil is commonly within 1 1/2 to 2 feet of the surface from November through April. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer ranges from strongly acid to neutral.

Depth to bedrock in the Chatfield soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer ranges from very strongly acid to moderately acid.

These soils are not suited to cultivated crops because of rock outcrops and undulating topography.

Most areas of these soils are in permanent pasture or are reverting to brush. Some areas are in federal land, namely Fort Drum Military Reservation.

These soils are suited to pasture. If used for pasture, it requires a management program that restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for northern red oak is moderately high on the Hudson soil and moderate for sugar maple on the Chatfield soil. The ridges and the knobs of bedrock are limitations in woodland management. There are few or no other major management concerns for woodland use.

The seasonal high water table, the clayey texture, and rate of water movement through the Hudson soil are limitations to use of these soils as sites for septic tank absorption fields and trench landfills. The seasonal high water table and slope are limitations on sites for other sanitary facilities. On the Chatfield soil, depth to bedrock, seepage, and the association of ridges and bedrock-cored knobs are limitations for sanitary facilities. The seasonal high water table in the Hudson soil, depth to bedrock in the Chatfield soil, and knobs of bedrock are limitations for shallow excavations and dwellings with basements. Slope, potential frost action in both soils, shrinking and swelling and low soil strength in the Hudson soil, and droughty conditions in the Chatfield soil are limitations for other urban uses. Potential for habitat for openland wildlife is good on both soils and for woodland wildlife is good on the Hudson soil and fair on the Chatfield soil.

The capability subclass is VIs.

HyE3—Hudson and Vergennes soils, 15 to 35 percent slopes, severely eroded. This map unit consists of moderately steep and steep, very deep,

moderately well drained Hudson and Vergennes soils. Areas are mainly on the sides of long and narrow, dissected areas and on the front of terraces. Most areas have rills and gullies resulting from erosion. Areas range from 20 to 40 acres. Some areas are mostly Hudson soils, some are mostly Vergennes soils, and some consist of both. Slopes are convex and irregularly shaped.

The total acreage of the unit is about 55 percent Hudson soils, 35 percent Vergennes soils, and 10 percent other soils. The soils were mapped together because they are similar in use and management.

Typically, the surface layer of the Hudson soils is mixed with part of the subsoil. The surface layer is brown silt loam. The subsoil is mottled and extends to a depth of 59 inches. It is brown silty clay loam and silty clay in the upper part and yellowish brown silt loam in the lower part. The substratum is mottled, brown silty clay to a depth of 60 inches or more.

Typically, the surface layer of the Vergennes soils is mixed with the upper part of the subsoil. It is grayish brown silty clay loam. The subsoil is mottled and extends to a depth of 29 inches. It is dark brown clay in the upper part and dark grayish brown clay in the lower part. The substratum is mottled clay varved with silt, to a depth of 60 inches or more.

Included with this unit in mapping are small areas where stones and boulders are on the surface, wet spots, and sand spots.

The seasonal high water table in the Hudson soils is commonly within 1 1/2 to 2 feet of the surface and in the Vergennes soils is within 1 to 3 feet of the surface in spring. The rate of water movement through the Hudson soils is moderately slow or moderate in the surface layer and slow or very slow in the subsoil and the substratum. In the Vergennes soils the rate is slow or very slow in the surface layer and very slow in the subsoil and the substratum. Runoff is rapid or very rapid. The capacity of these soils to store water available for plant growth is high. The surface layer is strongly acid to neutral in both soils.

Most areas of these soils are in pasture. Some areas are woodland. A few areas are idle.

These soils are not suited to cultivated crops because of the severely eroded surface layer, slope, and poor soil tilth. They are suitable for use as permanent pasture or woodland.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for northern red oak is moderately high on the Hudson soils, and is moderate on the Vergennes soils. Slope somewhat restricts equipment use. Erosion is a severe hazard. Very careful management is needed to control erosion during logging operations. The high content of clay and poor physical soil condition in the Vergennes soils cause high seedling mortality.

Slope, rate of water movement through the soils, the clayey texture, and the seasonal high water table are limitations to use of these soils as sites for sanitary facilities. Slope, the seasonal high water table, high shrinking and swelling, low soil strength, and potential frost action are limitations for most other urban uses. Potential for habitat for openland wildlife is fair in the Hudson soils and poor in the Vergennes soils. Potential for habitat for woodland wildlife is good in the Hudson soils and fair in the Vergennes soils.

The capability subclass is VIe.

InB—Insula-Quetico complex, rocky, 0 to 8 percent slopes. This map unit consists of nearly level to gently sloping, shallow and very shallow, well drained and somewhat excessively drained soils. These soils are in mostly broad, undulating areas on uplands. Rock outcrops make up 0.1 to 2 percent of most areas. Areas range from 15 to 100 acres or more.

This unit is about 45 percent shallow Insula soils, 45 percent very shallow Quetico soils, and 10 percent other soils and areas of rock outcrops. The soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Insula soil has a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is brown gravelly loam to a depth of about 15 inches. Potsdam sandstone and dolomite bedrock is at a depth of 15 inches.

Typically, the Quetico soil has a surface layer of dark brown loam about 4 inches thick. The subsoil is dark reddish brown gravelly sandy loam to a depth of about 9 inches. Potsdam bedrock is at a depth of 9 inches.

Included with this unit in mapping are small areas of moderately deep, well drained and somewhat excessively drained Millsite soils on ridges and shallow, poorly drained and very poorly drained Ruse soils on flats and in depressions. Also included are small areas where stones and boulders are on the surface, sand spots, and clay spots.

Bedrock is at a depth of 10 to 20 inches in the Insula soil and at a depth of less than 10 inches in the Quetico soil. The rate of water movement is moderately rapid through the Insula soil and moderate through the Quetico soil. Runoff is slow or medium, depending on surface relief. The capacity of these soils to store water available for plant growth is very low. The surface layer is very strongly acid to slightly acid in the Insula soil and very strongly acid or strongly acid in the Quetico soil.

Most areas of these soils are in permanent pasture. Some areas are woodland or are reverting to brush. Some areas are idle. A few areas are used for cultivated crops.

These soils are poorly suited to cultivated crops. The main limitations are depth to bedrock, droughtiness, and rock outcrops. Erosion is a hazard if slopes are bare of vegetation. Long-term hay or sod crops are effective in controlling erosion. If the soil is used for cultivated crops, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter, to control erosion, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for eastern white pine is high for the Insula soil and moderately high for the Quetico soil. Depth to bedrock and rock outcrops cause moderate seedling mortality and restrict rooting depth, resulting in a moderate rate of uprooting of trees in the Insula soil and a high rate of uprooting in the Quetico soil, during windy periods.

Depth to bedrock, rock outcrops, and seepage are limitations of this soil for urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is IVs.

IoB—Insula-Rock outcrop complex, 0 to 8 percent slopes. This map unit consists of shallow, nearly level to gently sloping, well drained Insula soil and areas of Rock outcrop on undulating uplands. Areas range from 15 to 100 acres.

This unit is about 60 percent Insula soil, 20 percent areas of Rock outcrop, and 20 percent other soils. The Insula soil and areas of Rock outcrop are in such an intricate pattern that they could not be mapped separately at the scale selected for mapping.

Typically, the Insula soil has a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is brown gravelly loam to a depth of about 15 inches. Potsdam sandstone and dolomite bedrock is at a depth of 15 inches.

Typically, Rock outcrop consists mainly of exposed Potsdam sandstone bedrock and partly of dolomite bedrock. The sandstone is poorly cemented, buff colored, and sandy in texture. The dolomite consists of magnesium carbonate.

Included with this unit in mapping are small areas of very shallow, somewhat excessively drained Quetico soils, moderately deep, well drained and somewhat excessively drained Millsite soils, and shallow, poorly drained and very poorly drained Ruse soils in depressions. Also included are small areas of moderately deep, somewhat poorly drained Chaumont soils between ridges and poorly drained and very poorly drained Guffin soils in depressions. Also included are small areas where stones and boulders are on the surface and areas of soils that have steep slopes.

Depth to bedrock in the Insula soil is 10 to 20 inches. Rate of water movement through the soil is moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is very low. The surface layer is very strongly acid to slightly acid.

Most areas of the Insula soil is in permanent pasture. Some areas are woodland or reverting to brush. Some areas are idle.

The Insula soil is not suited to cultivated crops because of rock outcrops and depth to bedrock. Erosion is a moderate hazard if slopes are bare of vegetation.

If used for pasture, the Insula soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of the Insula soil for eastern white pine is moderate. Depth to bedrock causes moderate seedling mortality and restricts rooting depth, resulting in some uprooting of trees during windy periods.

Depth to bedrock, rock outcrops, and seepage are limitations of this Insula soil for urban uses. Potential for habitat for openland and woodland wildlife is poor.

The capability subclass is VIIs.

IrB—Ira gravelly silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in elongated areas on hilltops and in undulating areas on upland plains. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 8 inches thick. The upper part of the subsoil is about 9 inches thick. It is yellowish brown, friable, gravelly loam and mottled, pale brown, firm, gravelly loam. The lower part of the subsoil is a very firm and brittle layer called a fragipan, and extends from a depth of 17 to 41 inches. It is mottled, brown gravelly loam. The substratum is mottled, is massive and very firm, and extends from a depth of 41 to 60 inches or more. It is grayish brown very gravelly loam in the upper part and gray very gravelly loam in the lower part.

Included with this soil in mapping are small areas of very poorly drained and poorly drained Sun soils in depressions and somewhat poorly drained Scriba soils in nearly level areas. Also included are small wet spots and stony areas.

The seasonal high water table in this Ira soil is commonly within 1 1/2 to 2 feet of the surface in February and March. The fragipan at a depth 17 inches restricts plant roots and slows down the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and very slow in the fragipan and the substratum. Runoff is slow or medium. The capacity of the soil to

store water available for plant growth is moderate. The surface layer is very strongly acid to neutral.

Many areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or idle.

This soil is well suited to cultivated crops. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for included wet spots. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table, rate of water movement through the fragipan and the substratum, and potential frost action are limitations of this soil as sites for sanitary facilities and for most other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIw.

IrC—Ira gravelly silt loam, 8 to 15 percent slopes. This is a sloping, very deep, moderately well drained soil mainly in linear, convex, sloping areas on the flanks of low hills and ridges on uplands. Areas range from 10 to 30 acres.

Typically, the surface layer is dark grayish brown gravelly silt loam about 8 inches thick. The upper part of the subsoil is about 9 inches thick. It is yellowish brown, friable gravelly loam and mottled, firm, pale brown gravelly loam. The lower part is a very firm and brittle layer called a fragipan, and extends from a depth of 17 to 41 inches. It is mottled, brown gravelly loam. The substratum is mottled, is massive and very firm, and extends from a depth of 41 to 60 inches or more. It is grayish brown, very gravelly loam in the upper part and gray, very gravelly loam in the lower part.

Included with this soil in mapping are small areas of somewhat poorly drained Scriba soils on foot slopes and well drained Sodus soils in moderately steep areas. Also included are small wet spots and stony areas.

The seasonal high water table in this Ira soil is commonly within 1 1/2 to 2 feet of the surface in February and March. The fragipan at a depth of 17 inches restricts plant roots and slows down the movement of water. Runoff is medium or rapid. The rate of water movement through the soil is moderate in the surface layer and in the upper part of the subsoil and very slow in the fragipan and the substratum. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to neutral.

Many areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or idle.

This soil is suited to cultivated crops. Erosion is a severe hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Random drainage is commonly needed for included wet spots. Slopes are mostly short and convex. Contour farming and longer crop rotations with grasses and legumes help to control erosion. Using winter cover crops and returning crop residue and adding manure to the soil help to control erosion, to maintain tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table, rate of water movement through the fragipan and the substratum, slope, and potential frost action are limitations of this soil as sites for sanitary facilities and for most other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIIe.

Ju—Junius loamy fine sand. This is a nearly level, very deep, poorly drained and somewhat poorly drained soil mainly in undulating to nearly flat areas on plains and along drainageways. Areas range from 15 to 50 acres. Slope ranges from 0 to 8 percent.

Typically, the surface layer is very dark gray loamy fine sand about 8 inches thick. The subsurface layer is mottled, pale brown loamy fine sand about 5 inches thick. The subsoil is mottled and about 13 inches thick. It is brown loamy fine sand in the upper part and grayish brown fine sand in the lower part. The substratum is mottled, grayish brown, stratified medium and fine sand.

Included with this soil in mapping are small areas of poorly drained and very poorly drained Granby soils in depressions and moderately well drained Deerfield soils on benches. Also included, in some places, are small areas of Junius soils that are similar to this soil but that have a gravelly and cobbly substratum. Also included are

small areas of somewhat poorly drained Minoa soils and poorly drained and very poorly drained Lamson soils.

The seasonal high water table in this Junius soil is commonly within 6 to 18 inches of the surface layer from December through May. The rate of water movement through the soil is moderately rapid in the surface layer and rapid in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid to neutral.

Many areas of this soil are used as pasture or woodland or are idle. A few wooded areas are predominantly stands of white cedar. Some cleared areas that have been drained are used for cultivated crops. A few previously cleared areas have been reforested to white pine.

This soil is moderately suited to cultivated crops. Drainage is needed if it is used for cultivated crops. If it is not drained, most areas are better suited to long-term hay crops. Using winter cover crops, crop rotation, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat restricts equipment use, causes moderate seedling mortality, and restricts rooting depth, which results in uprooting of trees during windy periods.

The prolonged seasonal high water table, the sandy texture, and the rapid rate of water movement through the soil are limitations of this soil for urban uses. On sites for sanitary absorption fields, seepage and inadequate filtration of the effluent can result in ground water contamination. Potential for habitat is fair for openland wildlife and poor for woodland wildlife.

The capability subclass is IIIw.

KgA—Kingsbury silty clay, 0 to 2 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, broad, irregularly shaped areas on plains. Areas range from 5 to 80 acres.

Typically, the surface layer is dark grayish brown silty clay about 7 inches thick. The subsurface layer is mottled, grayish brown silty clay about 5 inches thick. The subsoil is mottled and about 16 inches thick. It is firm, grayish brown clay in the upper part and olive gray clay in the lower part. The substratum is mottled, olive gray silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of deep, moderately well drained Vergennes soils on convex, sloping knolls and very poorly drained Livingston soils in depressions. Also included are moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils on nearly flat areas and in depressional areas. Also included are rock outcrops, small gravelly areas, stony areas, and sand spots.

The seasonal high water table in this Kingsbury soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is slow in the surface layer and very slow in the subsoil and the substratum. The clayey subsoil somewhat restricts rooting depth. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. It is considered an important soil for agricultural use. A few areas are idle or are planted to conifers. Some areas are used as pasture or woodland or are in urban use.

If properly drained, this soil is moderately suited to cultivated crops. Land smoothing and surface drains with proper outlets are effective in draining the soil for cultivated crops. Plowing in fall is common. In undrained areas, the seasonal high water table delays planting and harvesting crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity for red maple is moderate. The seasonal high water table somewhat limits equipment use and restricts rooting depth, which results in uprooting of some trees during windy periods.

The seasonal high water table, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action are limitations of this soil for urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IIIw.

KgB—Kingsbury silty clay, 2 to 6 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil mainly in concave, sloping areas on plains. Areas range from 5 to 40 acres.

Typically, the surface layer is dark grayish brown silty clay about 7 inches thick. The subsurface layer is mottled, grayish brown silty clay about 5 inches thick. The subsoil is mottled and about 16 inches thick. It is firm, grayish brown clay in the upper part and olive gray

clay in the lower part. The substratum is mottled, olive gray silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of very deep, moderately well drained Vergennes soils on convex, sloping knolls and very poorly drained Livingston soils in depressions. Also included are somewhat poorly drained Rhinebeck soils and poorly drained and very poorly drained Madalin soils. Also included are moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils in nearly flat areas and depressional areas. Also included are small gravelly areas, stony areas, areas of rock outcrops, and sand spots.

The seasonal high water table in this Kingsbury soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is slow in the surface layer and very slow in the subsoil and the substratum. The tight, clayey subsoil somewhat restricts rooting depth. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

Most areas of this soil have been cleared and are used for crops in dairy farming. It is considered an important soil for agricultural uses. A few areas are idle or are planted to conifers. Some areas are used as pasture or woodland or are in urban use.

If properly drained, this soil is moderately suited to cultivated crops. Land smoothing and interceptor drains and surface drains with proper outlets are effective in draining the soil for cultivated crops. Plowing in fall is common. Erosion is a serious hazard if slopes are bare of vegetation. In undrained areas, the seasonal high water table delays planting and harvesting crops. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use and restricts rooting depth, which results in uprooting of some trees during windy periods.

The seasonal high water table, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action are limitations of the soil for urban use. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IIIw.

Kh—Kingsbury-Livingston complex. This map unit consists of nearly level, very deep, somewhat poorly drained and very poorly drained soils mainly on smooth, broad flats and in depressions on plains. Areas range from 50 to 160 acres. Slope ranges from 0 to 2 percent.

This unit is 40 percent Kingsbury soils, 35 percent Livingston soils, and 25 percent other soils. The soils in this unit are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Kingsbury soil has a surface layer of dark grayish brown silty clay about 7 inches thick. The subsurface layer is mottled, grayish brown silty clay about 5 inches thick. The subsoil is mottled, grayish brown and olive brown clay about 16 inches thick. The substratum is mottled, olive gray silty clay to a depth of 60 inches or more.

Typically, the Livingston soil has a surface layer of black mucky silty clay about 6 inches thick. The subsoil is mottled, dark greenish gray to dark gray clay about 24 inches thick. The substratum is mottled, dark gray clay and gray silty clay to a depth of 60 inches or more.

Included with this unit in mapping are small areas of very deep, moderately well drained Vergennes soils on convex knolls and poorly drained Covington soils on flats and in depressions. Also included are somewhat poorly drained Rhinebeck soils and poorly drained and very poorly drained Madalin soils. Also included are moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils. Also included are small gravelly areas, areas of rock outcrops, and sand spots.

The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from December through May in the Kingsbury soil and is within 1 foot of the surface in the Livingston soil. The rate of water movement through the Kingsbury soil is slow in the surface layer and very slow in the subsoil and the substratum and through the Livingston soil is moderately slow in the surface layer and very slow or slow in the subsoil and the substratum. The tight, clayey subsoil layers somewhat restrict rooting depth. Runoff is slow in the Kingsbury soil and very slow in the Livingston soil. The capacity of these soils to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline in the Kingsbury soil and strongly acid to neutral in the Livingston soil.

Most areas of these soils are used as pasture or woodland or are idle. A few areas of the better drained Kingsbury soil are used for cultivated crops. Many of the previously cleared areas that had been used for cultivated crops have been planted to conifers.

Drainage of these soils is commonly difficult because of the intricate pattern of Kingsbury and Livingston soils. Land smoothing and surface drains with proper outlets are feasible in some areas. Renovating and seeding to long-term hay crops are common practices. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the

content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soils are too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity for sugar maple is moderate on the Kingsbury soil and for American elm is high on the Livingston soil. The seasonal high water table limits equipment use and restricts rooting depth, which results in uprooting of trees during windy periods. On the Livingston soil, the seasonal high water table causes high seedling mortality.

The seasonal high water table, the clayey texture, rate of water movement through these soils, poor stability, and potential frost action are limitations to use of these soils for urban uses. Potential of the Kingsbury soil for wildlife habitat is fair for openland wildlife and good for woodland wildlife, and that of the Livingston soil is poor for both openland and woodland habitat. Potential of the Livingston soil for habitat for wetland wildlife is fair.

The capability subclass is IVw.

LaB—Lagross-Haights complex, undulating. This map unit consists of very deep, well drained and moderately well drained soils mainly in nearly level and gently sloping, fan-shaped areas and on terraces. Areas range from 5 to 35 acres. Slope ranges from 0 to 8 percent.

This unit is about 45 percent Lagross soils, 45 percent Haights soils, and 10 percent other soils. The soils in this unit are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Lagross soil has a surface layer of dark brown shaly silt loam about 8 inches thick. The subsoil is brown shaly and very shaly silt loam about 28 inches thick. The substratum is dark brown very shaly silt loam to a depth of 60 inches or more.

Typically, the Haights soil has a surface layer of very dark grayish brown silt loam about 8 inches thick. The subsoil is about 28 inches thick. It is dark brown silt loam in the upper part and dark yellowish brown to brown shaly silt loam and shaly loam in the lower part. The substratum is grayish brown shaly loam to a depth of 60 inches or more. It has thin lenses and small pockets of sand.

Included with this unit in mapping are small areas of poorly drained and very poorly drained Gulf soils in flats and depressions. Also included are small areas of well drained Bice soils on hills and ridges. Also included are small wet spots, small marshes, and areas of soils that have steep slopes.

The seasonal high water table in the Lagross soil is commonly at a depth of more than 6 feet below the surface. The rate of water movement through the soil is moderately rapid. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Haights soil is commonly within 2 to 3 feet of the surface from February through April. The rate of water movement through the soil is moderate. Runoff is slow or medium. The capability of the soil to store water available for plant growth is moderate or high. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are used for cultivated crops. Some areas are used as pasture or woodland. A few areas are used in small gravel pit operations.

These soils are well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming helps to control erosion. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage in the Lagross soil, the seasonal high water table in the Haights soil, and small stones on the surface are limitations to use of these soils as sites for sanitary facilities. On the Lagross soil, there are few or no problems for septic tank absorption fields. On the Lagross soil, potential frost action is a limitation for local roads and streets. Small stones are a limitation for lawns and landscaping. There are few or no limitations for most other urban uses. On the Haights soil, the seasonal high water table is a limitation for shallow excavations and dwellings with basements. The seasonal high water table and in places slope are limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is fair on the Lagross soil and good on the Haights soil.

The capability subclass is IIe.

LaC—Lagross-Haights complex, rolling. This map unit consists of very deep, well drained and moderately well drained soils mainly in rolling, fan-shaped areas and on terraces. Areas range from 5 to 60 acres. Slope ranges from 5 to 15 percent.

This unit is about 45 percent Lagross soil, 45 percent Haights soil, and 10 percent other soils. The soils in the unit are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Lagross soil has a surface layer of dark brown shaly silt loam about 8 inches thick. The subsoil is

brown shaly and very shaly silt loam 28 inches thick. The substratum is dark brown very shaly silt loam to a depth of 60 inches or more.

Typically, the Haights soil has a surface layer of very dark grayish brown silt loam about 6 inches thick. The subsoil is about 28 inches thick. It is dark brown silt loam in the upper part and dark yellowish brown to brown shaly silt loam and shaly loam in the lower part. The substratum is grayish brown shaly loam to a depth of 60 inches or more. It has thin lenses and small pockets of sand.

Included with this unit in mapping are small areas of poorly drained and very poorly drained Gulf soils in flats and depressions. Also included are small areas of well drained Bice soils on hills and ridges. Also included are small wet spots, small marshes, and areas of soils that have steep slopes.

The seasonal high water table in the Lagross soil is commonly at a depth of more than 6 feet below the surface. The rate of water movement through the soil is moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Haights soil is commonly within 2 to 3 feet of the surface from February through April. The rate of water movement through the soil is moderate. Runoff is medium. The capability of the soil to store water available for plant growth is high. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are used for cultivated crops. Some areas are used as pasture or woodland. A few areas are used in small gravel pit operations.

These soils are moderately suited to cultivated crops. The climate is cool and the growing season is somewhat short. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming helps to control erosion. Crop rotation, using winter cover crops, returning crop residue, and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. There are few or no management concerns for woodland use.

Seepage and in places slope and small stones on the surface are limitations to use of the Lagross soils as sites for sanitary facilities. On the Haights soil, the seasonal high water table and in places slope are limitations for sanitary facilities. On the Lagross soil, slope and potential frost action and small stones are limitations for most other urban uses. On the Haights soil, the seasonal high water table is a limitation for shallow excavations and dwellings with basements. Slope is a limitation for small commercial buildings. Slope and the seasonal high water table are limitations for most other urban uses. Potential for habitat for openland and woodland wildlife is fair on the Lagross soil and good on the Haights soil.

The capability subclass is IIIe.

Lb—Lamson fine sandy loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in smooth, broad flats and in depressions. Areas range from 10 to 30 acres. Slope ranges from 0 to 3 percent, but is dominantly 1 or 0 percent.

The surface layer is black fine sandy loam about 5 inches thick. The subsoil is mottled and about 25 inches thick. It is olive brown to dark grayish brown fine sandy loam in the upper part and dark grayish brown loamy very fine sand in the lower part. The substratum is mottled, dark gray and gray, stratified fine sand, very fine sand, and silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Minoa soils and moderately well drained Galen soils. Also included are small areas of poorly drained and very poorly drained, silty Canandaigua soils.

The seasonal high water table in this Lamson soil is commonly within 1/2 foot of the surface from December to May. Some areas are ponded with as much as 1 foot of water in spring. The rate of water movement through the soil is moderate or moderately rapid throughout. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to mildly alkaline.

Many areas of this soil are used as pasture or woodland or are idle. A few wooded areas are predominantly stands of white cedar. Some cleared, drained areas are used for cultivated crops. A few previously cleared areas have been reforested to white spruce.

This soil is moderately suited to cultivated crops. Drainage is needed if the soil is used for cultivated crops. Unless the soil is drained, most areas are better suited to long-term hay. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and

restricts rooting depth, which results in uprooting of trees during windy periods.

The seasonal high water table is a limitation to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. The seasonal high water table is also a limitation for other urban uses. Poor stability is a limitation for shallow excavations. Potential frost action is a limitation for local roads and streets. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

Lc—Livingston mucky silty clay. This is a nearly level, very deep and very poorly drained soil mainly in smooth, broad, flat or depressional areas on plains. Areas range from 15 to 70 acres. Slope ranges from 0 to 3 percent, but is dominantly 1 or 0 percent.

Typically, the surface layer is black mucky silty clay about 6 inches thick. The subsoil is mottled and about 24 inches thick. It is dark greenish gray to dark gray, very firm, very plastic and very sticky clay. The substratum is mottled, dark gray to gray clay and silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of deep, somewhat poorly drained Kingsbury soils on flats and benches. Also included are small areas of moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils. Also included are small sandy areas, areas of rock outcrops, and stony areas.

From January through July, the seasonal high water table in this Livingston soil is commonly within 1 foot of the surface or the soil is sometimes ponded. The rate of water movement through the soil is slow or very slow in the subsoil and the substratum. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil are used as pasture or woodland. A few areas are used for cultivated crops. Many previously cleared areas are idle.

Unless adequately drained, this soil is poorly suited to cultivated crops. Subsurface and surface drainage with suitable outlets is effective in draining the soil. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for American elm is high. The prolonged seasonal high water table and ponding limit equipment use, cause high seedling mortality, and restrict rooting depth, which results in uprooting of trees during windy periods.

The prolonged seasonal high water table and ponding, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action are limitations to use of this soil for urban use. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

Ld—Livingston silty clay loam, frequently flooded. This is a nearly level, very deep, very poorly drained soil. It is subject to frequent flooding. It is mainly in broad, flat or depressional areas adjacent to slow-moving streams. Areas range from 2 to 50 acres. Slope ranges from 0 to 3 percent, but is dominantly 1 or 0 percent.

Typically, the surface layer is gray silty clay loam about 4 inches thick. The subsoil is mottled and about 26 inches thick. It is dark greenish gray to dark gray, very firm clay. The substratum is mottled, dark gray to gray silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Rhinebeck Variant soils in the higher positions on the landscape. Also included are small areas of Fluvaquents, Udifluvents, Saprists, and Aquents.

This Livingston soil is subject to flooding for long durations from November through April. The seasonal high water table is commonly at or near the surface from September through June. The rate of water movement through the soil is very slow or slow in the subsoil and the substratum. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil are used as pasture or woodland. A few areas are used for cultivated crops. Many previously cleared areas are idle.

This soil is poorly suited to cultivated crops. Drainage and some flood protection measures are needed if the soil is used for cultivated crops. Using winter cover crops and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter in cultivated areas.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is flooded or too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for American elm is high. Frequent flooding and the prolonged seasonal high water table limit equipment use, cause high seedling mortality, and restrict rooting depth, resulting in uprooting of trees during windy periods.

Frequent flooding, the prolonged seasonal high water table, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action

are limitations to use of the soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is Vw.

LoA—Lowville silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, well drained soil mainly in nearly flat, broad areas on uplands. Areas range from 5 to 23 acres.

Typically, the surface layer is covered by a dark brown silt loam about 6 inches thick. The surface layer is thin, organic leaf mat. The subsoil is brown silt loam about 18 inches thick. The substratum is mottled, dark grayish brown to dark brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Nellis soils, moderately well drained Amenia soils, well drained Madrid soils, and moderately well drained Bombay soils. Also included are small areas where gravel, cobbles, or flagstones are in the surface layer or areas of rock outcrops.

The rate of water movement through the Lowville soil is moderate to a depth of about 60 inches and slow below that depth. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to moderately acid.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Some areas are in urban use.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

Rate of water movement through the lower part of the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons. Potential frost action is a limitation for local roads and streets. There are few or no other problems for other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability class is I.

LoB—Lowville silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly on convex slopes on uplands. Areas range from 4 to 60 acres.

Typically, the surface layer is covered by a thin, organic leaf mat. The surface layer is dark brown silt loam about 6 inches thick. The subsoil is brown silt loam about 18 inches thick. The substratum is mottled, dark grayish brown to dark brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Nellis soils, moderately well drained Amenia soils, and well drained Madrid soils. Also included are small areas where gravel, cobbles, or flagstones are in the surface layer and areas of rock outcrops.

The rate of water movement through this Lowville soil is moderate to a depth of about 60 inches and slow below that depth. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to moderately acid.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Other areas are in urban uses.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the lower part of the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Slope is a limitation for small commercial buildings. Potential frost action is a limitation for local roads and streets. There are few or no additional limitations for other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

LoC—Lowville silt loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly in long, narrow areas on uplands. Areas range from 10 to 36 acres.

Typically, the surface layer is covered by a thin, organic leaf mat. The surface layer is dark brown silt loam about 6 inches thick. The subsoil is brown silt loam about 18 inches thick. The substratum is mottled, dark grayish brown to dark brown fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Amenia soils and moderately well drained Bombay soils. Also included are small areas where gravel, cobbles, or flagstones are in the surface layer and areas of rock outcrops.

The rate of water movement through this Lowville soil is moderate to a depth of about 60 inches and slow below that depth. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to moderately acid.

Most areas of this soil are used for cultivated row crops in dairy farming. Some areas are highly productive woodlots. Some areas are in urban use.

This soil is moderately suited to cultivated crops. If it is used for cultivated crops, field strips or stripcropping helps to control erosion. Crop rotation with long-term sod or hay crops, adding manure and returning crop residue to the soil, and using winter cover crops help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Erosion is a moderate hazard because of slope.

Rate of water movement through the lower part of the substratum and slope are limitations to use of this soil as sites for sanitary facilities. Slope and potential frost action are limitations for most other urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IIIe.

LoD—Lowville silt loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil mainly on convex slopes or in hilly areas on uplands. Areas range from 10 to 45 acres.

Typically, the surface layer is a little thinner than that of the less sloping Lowville soils. It is dark brown silt loam. The subsoil is brown silt loam to a depth of about 24 inches. The substratum is mottled, dark grayish brown to dark brown sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of severely eroded soils. Also included are small areas where gravel, cobbles, or flagstones are in the surface layer and areas of rock outcrops.

The seasonal high water table in this Lowville soil is commonly at a depth of more than 6 feet. The rate of water movement through the soil is moderate to a depth of about 60 inches and slow below that depth. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to moderately acid.

Most areas of this soil are used for pasture. Some areas are used for crops or are small woodlots.

This soil is poorly suited to cultivated crops because of slope and because erosion is a severe hazard. If it is used for cultivated crops, conservation tillage, crop rotation with long-term hay crops or sod, using winter cover crops, returning crop residue to the soil, and installing diversions help to control erosion, to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Erosion is a serious hazard if slopes are bare of vegetation. Good management is needed to control erosion during logging operations. Slope somewhat limits equipment use.

Slope and rate of water movement through the lower part of the substratum are limitations of this soil for most urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IVe.

Ma—Madalin silt loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in smooth, broad, irregular areas or in long, narrow areas on lowland plains. Areas range from 5 to 60 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 5 inches thick. The subsoil is mottled, grayish brown to dark grayish brown silty clay about 16 inches thick. The substratum is mottled, gray silty clay varved with silt.

Included with this soil in mapping are small areas of very poorly drained Livingston soils and somewhat poorly drained Rhinebeck soils. Also included are small sand spots.

The seasonal high water table in this Madalin soil is commonly within 1/2 foot of the surface from November through June. The rate of water movement through the soil is moderately slow in the surface layer, slow in the subsoil, and slow or very slow in the substratum. Runoff is very slow or ponded. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

Many areas of this soil are used as pasture or woodland or are idle. A few wooded areas are predominantly stands of white cedar. Some cleared, drained areas are used for cultivated crops. A few

previously cleared areas have been reforested to white spruce.

This soil is poorly suited to cultivated crops. Drainage is needed if it is used for cultivated crops. Land smoothing and surface drainage with suitable outlets are effective in draining the soil for cultivated crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, which results in uprooting of trees during windy periods.

The prolonged seasonal high water table, the clayey texture, rate of water movement through the soil, poor stability, and potential frost action are limitations to use of this soil for urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

MdA—Madrid sandy loam, 0 to 3 percent slopes. This is a nearly level, very deep, well drained soil mainly in small areas on top of elongated hills. Areas range from 5 to 20 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil is about 30 inches thick. It is brown to yellowish brown sandy loam in the upper part and dark brown fine sandy loam in the lower part. The substratum is dark brown gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay soils and well drained Nellis soils. Also included, where bedrock is 20 to 40 inches below the surface, are small areas of moderately deep, well drained and moderately well drained Galway soils.

The rate of water movement through this Madrid soil is moderate in the surface layer and in the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Other areas are in urban use.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the subsoil and the substratum are limitations of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons. Potential frost action is a limitation for local roads and streets. There are few or no problems for most other urban uses. Potential for habitat for openland and woodland wildlife is good.

The capability class is I.

MdB—Madrid sandy loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly on the top of convex, elongated hills and ridges. Areas range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil is about 30 inches thick. It is brown to yellowish brown sandy loam in the upper part and dark brown fine sandy loam in the lower part. The substratum is dark brown, gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay soils, well drained Nellis soils, and moderately well drained Amenia soils. Also included, where bedrock is 20 to 40 inches below the surface, are small areas of moderately deep Galway soils.

The rate of water movement through this Madrid soil is moderate in the surface layer and the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Other areas are in urban use.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be grown intensively. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation,

pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorption fields. Slope and seepage are limitations for sewage lagoons. Potential frost action is a limitation for local roads and streets. Potential for habitat for openland and woodland wildlife is good.

The capability subclass is IIe.

MdC—Madrid sandy loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly on the upper flanks and side slopes of elongated hills and ridges. Areas range from 10 to 50 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 8 inches thick. The subsoil is about 30 inches thick. It is brown to yellowish brown sandy loam in the upper part and dark brown fine sandy loam in the lower part. The substratum is dark brown, gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay soils, well drained Nellis soils, and moderately well drained Amenia soils. Also included, where bedrock is 20 to 40 inches below the surface, are small areas of moderately well drained Galway soils.

The rate of water movement through this Madrid soil is moderate in the surface layer and the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Other areas are in urban use.

This soil is moderately suited to cultivated crops. If it is used for cultivated crops, field strips or strip cropping help to control erosion. Crop rotation with long-term hay crops or sod, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorption fields. Slope is a limitation for sewage lagoons and both trench and area sanitary landfills. Slope and potential frost action are limitations for most other urban uses. Potential for habitat for woodland wildlife is good.

The capability subclass is IIIe.

MdD—Madrid sandy loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil mainly on the sides of elongated hills and ridges. Areas range from 10 to 40 acres.

Typically, the surface layer is a little thinner than that of the less sloping Madrid soils. It is sandy loam. The subsoil extends to a depth of 38 inches. It is brown to yellowish brown sandy loam in the upper part and dark brown fine sandy loam in the lower part. The substratum is dark brown gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay soils on foot slopes and well drained Nellis and Lowville soils. Also included are small areas where stones and boulders are on the surface.

The rate of water movement through this Madrid soil is moderate in the surface layer and the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to slightly acid.

Most areas of the soil are used as pasture. Some areas are used for crops or are small woodlots. A few areas are in urban use.

This soil is poorly suited to cultivated crops. Erosion is a severe hazard. The main limitation is slope. Conservation tillage, crop rotation with long-term hay crops or sod, using winter cover crops, returning crop residue to the soil, and installing diversions help to control erosion, to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Erosion is a hazard. Slope is a limitation for equipment use. Good management is needed to control erosion during logging operations.

Slope is a limitation of this soil for most urban uses. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IVe.

MnB—Manlius shaly silt loam, 3 to 8 percent slopes. This is a gently sloping, moderately deep, well drained to excessively drained soil mainly in convex, sloping areas on low-lying ridges on uplands. Areas range from 10 to 40 acres.

Typically, the surface layer is dark brown shaly silt loam about 7 inches thick. The subsoil is brown very shaly silt loam about 9 inches thick. The substratum is dark grayish brown very shaly silt loam to a depth of 36 inches. Shale bedrock is at a depth of 36 inches.

Included with this soil in mapping are small areas of shallow, somewhat excessively drained Nassau soils, moderately deep, somewhat poorly drained Angola soils in nearly flat areas, and moderately deep, poorly drained and very poorly drained Allis soils in depressions. Also included are small areas that have bedrock escarpments and rock outcrops.

The rate of water movement through this Manlius soil is moderate. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is extremely acid to strongly acid.

Most areas of this soil are woodland or are reverting to brush. Some areas are in pasture or crops. A few areas are idle.

This soil is suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. The soil is droughty in midsummer. Contour farming, returning crop residue and applying manure to the soil, and using winter cover crops help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for black cherry is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock is a limitation to use of this soil as sites for sanitary facilities, shallow excavations, and buildings with basements. Depth to bedrock, potential frost action, slope, and droughty conditions are limitations for other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIe.

MnC—Manlius shaly silt loam, 8 to 15 percent slopes. This is a sloping, moderately deep, well drained to excessively drained soil mainly in convex, sloping areas on ridges on uplands. Areas range from 10 to 50 acres.

Typically, the surface layer is dark brown shaly silt loam about 7 inches thick. The subsoil is brown very shaly silt loam about 9 inches thick. The substratum is dark grayish brown very shaly silt loam to a depth of 36 inches. Shale bedrock is at a depth of 36 inches.

Included with this soil in mapping are small areas of shallow, somewhat excessively drained Nassau soils on ridgetops and moderately deep, somewhat poorly drained Angola soils on foot slopes. Also included are small areas of Manlius soils on moderately steep slopes. Also included are small areas that have bedrock escarpments, areas of rock outcrops, and wet spots.

The rate of water movement through this Manlius soil is moderate. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is extremely acid to strongly acid.

Most areas of this soil are woodland or are reverting to brush. Some areas are in pasture or crops. A few areas are idle.

This soil is moderately suited to cultivated crops. Erosion is a severe hazard if slopes are bare of vegetation. The soil is droughty in midsummer. Contour farming, installing field strips and diversions, crop rotation with long-term hay crops or sod, returning crop residue, growing winter cover crops, and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for black cherry is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock and slope are limitations to use of this soil as sites for sanitary facilities, shallow excavations, dwellings with basements, and small commercial buildings. Depth to bedrock, slope, potential frost action, and droughty conditions are limitations for other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIIe.

MoA—Massena silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained and poorly drained soil mainly in smooth, narrow or irregularly shaped areas on upland till plains. Areas range from 3 to 45 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is mottled, yellowish brown gravelly loam about 18 inches thick. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay and Amenia soils on

ridges. Also included are very poorly drained and poorly drained Sun soils in flat areas and in depressions.

The seasonal high water table in this Massena soil is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement through the soil is moderate in the surface layer and slow or moderately slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is considered a prime farmland soil, where drained. Some areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops. Random or pattern drainage is generally needed if the soil is used for cultivated crops. In undrained areas the seasonal high water table somewhat delays planting and harvesting crops. Crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and installing drainage.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

MoB—Massena silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained and poorly drained soil mainly in concave, sloping areas on uplands. Areas range from 3 to 30 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is mottled, yellowish brown gravelly loam about 18 inches thick. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Bombay and Amenia soils on ridges and poorly drained Sun soils in flats and in depressions.

The seasonal high water table is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement through the soil is moderate in the surface layer and slow or moderately slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this Massena soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops. Random drainage or interceptor drains are generally needed if the soil is used for cultivated crops. In undrained areas the seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and installing drainage. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table and rate of water movement through the subsoil and the substratum are limitations of this soil as sites for sanitary facilities and for other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

MpB—Massena very stony loam, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, somewhat poorly drained and poorly drained soil mainly in undulating areas on uplands. Areas range from 10 to 90 acres.

Typically, the surface layer is very dark grayish brown loam about 9 inches thick. The subsoil is mottled, yellowish brown gravelly loam about 18 inches thick. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of nonstony Massena soils and very poorly drained and poorly drained Sun soils in depressions.

The seasonal high water table in this Massena soil is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement

through the soil is moderate in the surface layer and slow or moderately slow in the subsoil and the substratum. Large stones, about 3 to 25 feet apart, cover 3 to 15 percent of the surface. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil are in permanent pasture or are woodland. Some areas are reverting to brush. A few areas are idle.

This soil is not suited to cultivated row crops because of the large stones on the surface. It is suitable for use as pasture or woodland.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and installing drainage.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table and rate of water movement through the subsoil and the substratum and large stones on the surface are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table and potential frost action and large stones are limitations for most other urban uses. Potential for habitat is poor for openland wildlife and good for woodland wildlife.

The capability subclass is VIIs.

MtB—Millsite loam, rocky, 0 to 8 percent slopes. This soil is a nearly level to gently sloping, moderately deep, well drained and somewhat excessively drained soil mainly in undulating areas on uplands. Outcrops of gneiss bedrock make up 0.1 to 2.0 percent of the surface. Areas range from 5 to 25 acres.

Typically, the surface layer is very dark grayish brown loam about 6 inches thick. The subsoil is about 14 inches thick. It is brown loam in the upper part and brown gravelly loam in the lower part. The substratum is yellowish brown gravelly loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of shallow, well drained Insula soils and poorly drained and very poorly drained Ruse soils in nearly level areas and in depressions.

Bedrock in this Millsite soil is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to slightly acid.

Most areas of this soil are used as woodland or are reverting to brush. Some areas are in pasture. A few areas are in crops.

This soil is well suited to cultivated crops. It is moderately droughty during the growing season. In places rock crops out on the surface. The climate is cool, and the growing season is short. Erosion is a moderate hazard if slopes are bare of vegetation. Contour farming, crop rotation, returning a crop residue to the soil, using winter cover crops, and application of manure help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Depth to bedrock, rock outcrops, and seepage are limitations to use of this soil as sites for sanitary facilities. Depth to bedrock is a limitation for shallow excavations and dwellings with basements. Potential frost action and droughty conditions are limitations for many other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is IIe.

MuC—Millsite-Rock outcrop complex, rolling. This map unit consists of moderately deep, well drained and somewhat excessively drained Millsite soil and areas of Rock outcrop. The Millsite soil is 20 to 40 inches deep over gneiss, granite, or schist and Grenville marble bedrock. It mainly is in rolling areas on low-lying ridges and hills. Areas range from 10 to 60 acres. Slope ranges from 5 to 15 percent.

This unit is about 55 percent Millsite soil, 20 percent Rock outcrop, and 25 percent other soils. The Millsite soil and areas of Rock outcrop are in such an intricate pattern on the landscape that they could not be mapped separately at the scale selected for mapping.

Typically, the Millsite soil has a surface layer of very dark grayish brown loam about 6 inches thick. The subsoil is about 14 inches thick. It is brown loam in the upper part and brown gravelly loam in the lower part. The substratum is yellowish brown gravelly loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches.

Typically, Rock outcrop consists of exposures of gneiss or granite that is hard and brittle, well fractured, and jointed.

Included with this unit in mapping are small areas of shallow, well drained Insula soils on ridgetops and poorly drained and very poorly drained Ruse soils on flats and

in depressions. Also included are small areas of deep, somewhat poorly drained Rhinebeck soils. Also included are small areas where stones and boulders are on the surface.

Depth to bedrock in this Millsite soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to slightly acid.

Most areas of the Millsite soil are woodland or are reverting to brush. Some areas are idle.

The Millsite soil is not suited to cultivated crops because of rock outcrops. Also, it is moderately droughty, and has a cool climate and a short growing season.

If used for pasture, the Millsite soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of the Millsite soil for sugar maple is moderate. Rock outcrops limit equipment use.

Depth to bedrock, rock outcrops, seepage, and slope are limitations to use of the Millsite soil as sites for sanitary facilities. Potential frost action and droughty conditions are limitations for other urban uses. Potential for habitat is good for openland wildlife and fair for woodland wildlife.

The capability subclass is VIs.

MuE—Millsite-Rock outcrop complex, steep. This map unit consists of moderately deep, well drained and somewhat excessively drained Millsite soil and areas of Rock outcrop. The Millsite soil is 20 to 40 inches deep over gneiss, granite, and schist and lesser amounts of Grenville marble bedrock. It is mainly on the sides of ridges and low hills. Areas range from 20 to 100 acres. Slope ranges from 15 to 35 percent.

This unit consists of about 45 percent Millsite soil, 45 percent Rock outcrop, and 10 percent other soils. The Millsite soil and areas of Rock outcrop are in such an intricate pattern on the landscape that they could not be mapped separately at the scale selected for mapping.

Typically, the Millsite soil has a gray surface layer that is a little thinner and lighter than that of the less sloping Millsite soil. It is loam. The subsoil is about 14 inches thick. It is brown loam in the upper part and brown gravelly loam in the lower part. The substratum is yellowish brown gravelly loam to a depth of 30 inches. Gneiss bedrock is at a depth of 30 inches or more.

Typically, Rock outcrop consists of exposures of gneiss or granite bedrock and is hard and brittle, well fractured, and jointed.

Included with this unit in mapping are small areas of shallow, well drained Insula soils on ridgetops. Also included are small areas where stones and boulders are on the surface.

Depth to bedrock in this Millsite soil ranges from 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is very strongly acid to slightly acid.

Most areas of the Millsite soil are woodland or are reverting to brush. Some areas are permanent pasture. Some areas are idle.

The Millsite soil is not suited to cultivated crops because of slope and rock outcrops.

If used for pasture, the Millsite soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of the Millsite soil for sugar maple is moderate. Slope, rock outcrops, and the moderate erosion hazard are major management concerns for woodland use.

Slope, depth to bedrock and rock outcrops are limitations of the Millsite soil as sites for urban uses. Potential for habitat is poor for openland wildlife and fair for woodland wildlife.

The capability subclass is VIIe.

Mv—Minoa fine sandy loam. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, broad or irregularly shaped areas. Areas range from 3 to 30 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark grayish brown fine sandy loam about 8 inches thick. The subsoil is about 19 inches thick. It is brown loamy very fine sand in the upper part and mottled, brown loamy very fine sand in the lower part. The substratum is pale brown loamy fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Arkport soils and moderately well drained Galen soils on knolls and poorly drained Lamson soils in depressions. Also included are small areas of silty, somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils. Also included are small areas where cobblestones are on the surface.

The seasonal high water table in this Minoa soil is commonly within 1/2 to 1 1/2 feet of the surface from February through April. The rate of water movement through the soil is moderate in the subsoil and moderate or moderately rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops. Random drainage is needed if the soil is used for cultivated crops. In undrained areas, the seasonal high water table delays planting and harvesting crops. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for white ash is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table and seepage are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table, poor stability, and potential frost action are limitations for most other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

MwA—Muskellunge silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, broad, irregularly shaped areas on plains and margins of uplands. Areas range from 5 to 80 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled, brown to dark grayish brown silty clay about 14 inches thick. The substratum is mottled, grayish brown silty clay over dark gray silty clay and is varved with silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Heuvelton soils on knolls and ridges. Also included are small areas of rock outcrops and sand spots.

The seasonal high water table in this Muskellunge soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most cleared areas of this soil are used for cultivated crops in dairy farming. This is a prime farmland soil, where drained. Some areas are in pasture. Other areas are used as woodland or are reverting to brush. A few areas have been reforested to conifers.

This soil is moderately suited to cultivated crops. The climate is cool, and the growing season is short. Drainage is commonly needed if the soil is used for cultivated crops. Land smoothing and surface drainage with suitable outlets are effective in draining the soil. Plowing in fall is common. In undrained areas the seasonal high water table delays planting and harvesting crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use.

The seasonal high water table, the clayey texture, and rate of water movement through the subsoil are limitations to use of this soil as sites for most sanitary facilities. The seasonal high water table, potential frost action, low soil strength, and poor stability are limitations for most other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

MwB—Muskellunge silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil mainly in concave, sloping areas on plains and at the margins of uplands. Areas range from 5 to 50 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled, brown to dark grayish brown silty clay about 14 inches thick. The substratum is mottled, grayish brown silty clay over dark gray silty clay and is varved with silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Heuvelton soils on convex knolls. Also included are small areas of rock outcrops and sand spots.

The seasonal high water table in this Muskellunge soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most cleared areas of this soil are used for cultivated crops in dairy farming. Some areas are in pasture. Other areas are used as woodland or are reverting to brush. A few areas have been reforested to conifers.

This soil is moderately suited to cultivated crops. The climate is cool, and the growing season is short. Drainage is commonly needed if the soil is used for cultivated crops. Land smoothing and surface drainage with suitable outlets are effective in draining the soil. Plowing in fall is common. Erosion is a serious hazard if slopes are bare of vegetation. Contour tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth. These practices help to control erosion.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use.

The seasonal high water table, the clayey texture, and rate of water movement through the soil are limitations to use of this soil as sites for most sanitary facilities. The seasonal high water table, potential frost action, low soil strength, and poor stability are limitations for most other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

MxC—Muskellunge-Millsite-Rock outcrop complex, rolling. This map unit consists of very deep, somewhat poorly drained Muskellunge soil, moderately deep, well drained and somewhat excessively drained Millsite soil, and areas of Rock outcrop. Areas of these soils and Rock outcrop are mainly on groups of ridges and knobs on an otherwise flat plain. The Muskellunge soil is mainly between the ridges and knobs and partly in grooves and troughs within the ridges and knobs. The Millsite soil is mainly on the sides of ridges and knobs. Areas of Rock outcrop are on ridgetops. The ridges and knobs are generally oriented NNE-SSW. Areas range from 15 to 100 acres. Slope ranges from 5 to 15 percent.

This unit is about 45 percent Muskellunge soil, 25 percent of Millsite soil, 10 percent Rock outcrop, and 20 percent other soils. These soils and areas of Rock outcrop are in such an intricate pattern on the landscape that they could not be mapped separately at the scale selected for mapping.

Typically, the surface layer of the Muskellunge soil is dark grayish brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 14 inches thick. It is brown silty clay in the upper part and grayish brown silty clay in the lower part. The substratum, to a depth of 60 inches or more, is grayish brown silty clay varved with silt.

Typically, the surface layer of the Millsite soil is very dark grayish brown loam about 6 inches thick. The subsoil is about 14 inches thick. It is brown loam in the upper part and brown gravelly loam in the lower part. The substratum is yellowish brown gravelly loam to a depth of 28 inches. Bedrock is at a depth of 28 inches.

Typically, Rock outcrop consists of exposures of mainly granite, gneiss, or sandstone and, in some places, partly marble.

Included with this unit in mapping are small areas of shallow, well drained Insula soils, very shallow, somewhat excessively drained Quetico soils, and deep, well drained Bice soils. Also included, intermingled mainly with the Muskellunge soil, are areas of moderately deep, somewhat poorly drained Chaumont soils, moderately well drained Wilpoint soils, and very deep, moderately well drained Collamer soils. Also included are small areas of poorly drained and very poorly drained Madalin soils and very poorly drained Livingston soils in depressions. Also included are areas of steeper soils.

The seasonal high water table in the Muskellunge soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. The capacity of the soil to store water available for plant growth is high. Runoff is slow. The surface layer is strongly acid to neutral.

Bedrock in the Millsite soil is at a depth of 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. The capacity of the soil to store water available for plant growth is low or moderate. Runoff is medium. The surface layer is very strongly acid to slightly acid.

Most areas of these soils are permanent pasture or woodland or are reverting to brush. Some areas are idle.

These soils are generally not suited to cultivated crops. The climate is cool, and the growing season is short. The main limitations are variable depth to bedrock, the seasonal high water table in the Muskellunge soil, rock outcrops, and the included areas of steeper soils. These limitations prohibit the use of large machinery for cultivation. Erosion is a moderate hazard on slopes if bare of vegetation.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and applications of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. Rock outcrops on ridges limit woodland use and management.

Slope is a limitation to use of these soils as sites for sanitary facilities. In addition, on the Muskellunge soil, the seasonal high water table, the clayey texture, and the rate of water movement through the subsoil and the substratum are limitations to these uses. On the Millsite soil, depth to bedrock, seepage, slope, and rock outcrops on ridges are limitations to these uses. The seasonal high water table, the poor stability, low soil strength, and potential frost action on the Muskellunge soil, slope and depth to bedrock on the Millsite soil, and rock outcrops on ridges are limitations for other urban uses. Potential of these soils is good for habitat for openland wildlife. Potential for habitat for woodland wildlife is good on the Muskellunge soil and fair on the Millsite soil.

The capability subclass is VIIs.

NaC—Nassau shaly silt loam, 8 to 15 percent slopes. This is a sloping, shallow, somewhat excessively drained soil mainly on ridges and knobs cored with bedrock. It is on uplands. Areas range from 20 to 120 acres.

Typically, the surface layer is dark brown shaly silt loam about 5 inches thick. The subsoil is brown very shaly silt loam to a depth of 14 inches. Dark shale bedrock is at a depth of 14 inches.

Included with this soil in mapping are small areas of moderately deep, well drained and excessively drained Manlius soils and poorly drained and somewhat poorly drained Allis soils. Also included are small areas of rock outcrops and small areas of soils on steep slopes.

Depth to bedrock in this Nassau soil is less than 20 inches. The rate of water movement through the soil is moderate. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is very low. The surface layer is very strongly acid or strongly acid.

Most areas of this soil are permanent pasture or woodland or are reverting to brush. A very small area is in cultivated crops.

This soil is poorly suited to cultivated crops. Erosion is a serious problem if slopes are bare of vegetation. The soil is droughty in midsummer. Tillage and planting on the contour and stripcropping on the longer slopes help to control erosion. Crop rotation with long-term hay crops or sod, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Depth to bedrock causes high seedling mortality and restricts rooting depth, resulting in a moderate rate of uprooting of trees during windy periods.

Depth to bedrock, droughtiness, and slope are limitations to use of this soil as sites for urban uses. Potential for habitat is poor for openland and woodland wildlife.

The capability subclass is IVe.

NbF—Nassau-Manlius shaly silt loams, rocky, 25 to 50 percent slopes. This map unit consists of shallow, steep to very steep, somewhat excessively drained and well drained soils. These soils are on long and narrow, dissected hills and ridges cored with bedrock. Rock outcrops cover 0.1 to 2 percent of the surface. Areas range from about 20 to 60 acres.

This unit is about 45 percent Nassau soils, 45 percent Manlius soils, and 10 percent other soils and areas of rock outcrop. These soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Nassau soil has a surface layer of dark brown shaly silt loam about 5 inches thick. The subsoil is brown very shaly silt loam to a depth of 14 inches. Dark shale bedrock is at a depth of 14 inches.

Typically, the Manlius soil has a surface layer of dark brown shaly silt loam about 7 inches thick. The subsoil is brown very shaly silt loam about 9 inches thick. The substratum is dark grayish brown very shaly silt loam to a depth of 36 inches. Shale bedrock is at a depth of 36 inches.

Included with these soils in mapping are small areas of moderately deep, somewhat poorly drained Angola soils in the wetter positions on the landscape. Also included are small gullies and stony areas.

The rate of water movement through this Nassau soil is moderate. Runoff is rapid or very rapid. The capacity of the soil to store water available for plant growth is very low. The surface layer is very strongly acid or strongly acid.

The rate of water movement through this Manlius soil is moderate. Runoff is moderate to very rapid. The capacity of the soil to store water available for plant growth is low. The surface layer is extremely acid to strongly acid.

Most areas of these soils are woodland or are reverting to brush. Some areas are in pasture. These soils are not suited to cultivated crops. It is better suited to use as woodland.

If used for pasture, these soils require a management program that controls erosion and minimizes overgrazing and restricts grazing when the soils are too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity for sugar maple on the Nassau soil and for black cherry on the Manlius soil is moderate. The main management concerns are the moderate

erosion hazard, limited equipment use, high rate of seedling mortality, and shallow rooting depth, which can result in uprooting of trees during windy periods.

Depth to bedrock and slope are limitations of these soils for urban uses. Potential for habitat is poor for openland and woodland wildlife.

The capability subclass is VIIe.

NIA—Nellis loam, 0 to 3 percent slopes. This is a nearly level, very deep, well drained soil mainly in smooth, oblong areas on hilltops and ridges on uplands. Areas range from 3 to 15 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Amenia soils, somewhat poorly drained and poorly drained Massena soils, and very poorly drained and poorly drained Sun soils on the wetter parts of the landscape. Also included are well drained Lowville soils, which have a silty mantle, and moderately deep, well drained and moderately well drained Galway soils. Also included are small areas where cobbly or flaggy rock fragments are in the surface layer and small areas of rock outcrops.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Some areas are in urban use.

This soil is very well suited to cultivated crops. If it is managed properly, row crops can be grown intensively. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Seepage is a limitation for sewage lagoons. Potential frost action is a limitation for local roads and streets. There are few or no problems for other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability class is I.

NIB—Nellis loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly in convex areas and in some long, narrow areas on hilltops and ridges on uplands. Areas range from 8 to 45 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Amenia soils, somewhat poorly drained and poorly drained Massena soils, and very poorly drained and poorly drained Sun soils on the wetter parts of the landscape. Also included are well drained Lowville soils that have a silty mantle and moderately deep, well drained and moderately well drained Galway soils. Also included are small areas where cobbly or flaggy rock fragments are in the surface layer and small areas of rock outcrops.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil are used for cultivated crops in dairy farming. Some areas are highly productive woodlots. Some areas are in urban use.

This soil is very well suited to cultivated crops. If it is managed properly, row crops can be grown intensively. Erosion is a slight hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the organic content, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Slopes and seepage are limitations for sewage lagoons. Potential frost action is a limitation for local roads and streets. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIe.

NlC—Nellis loam, 8 to 15 percent slopes. This is a sloping, very deep, well drained soil mainly in long, narrow, convex areas on flanks of hilltops and ridges on uplands. Areas range from 8 to 45 acres.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Amenia soils on somewhat wetter parts of the landscape and, where the soils have a silty mantle, well drained Lowville soils. Also included are small areas of moderately deep, well drained and moderately well drained Galway soils. Also included are small areas where cobbly or flaggy rock fragments are in the surface layer and areas of rock outcrops.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil are used for cultivated row crops in dairy farming. Some areas are highly productive woodlots or are sugarbushes. Some areas are in urban use.

This soil is moderately suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Field strips or stripcropping help to control erosion. Crop rotation with long-term hay crops or sod, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

Rate of water movement through the substratum is a limitation to use of this soil as sites for septic tank absorption fields. Slope is a limitation for sewage lagoons and for both trench and area sanitary landfills. Slope and potential frost action are limitations for other urban uses. Potential for habitat is good for woodland wildlife.

The capability subclass is IIIe.

NlD—Nellis loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil mainly in long, narrow areas on the sides of ridges and hills on uplands. Areas range from 8 to 30 acres.

Typically, the surface layer is brown loam about 9 inches thick. The subsoil is dark yellowish brown loam about 12 inches thick. The substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are a few small areas of well drained Lowville soils that have a silty mantle. Also included are small very severely eroded areas. Also included are small areas of rock outcrops and small areas where large stones are on the surface.

The rate of water movement through this Nellis soil is moderate in the subsoil and moderately slow or moderate in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to neutral.

Most areas of this soil are used for pasture. Some areas are used for crops or are small woodlots. Some areas are in urban use.

This soil is poorly suited to cultivated crops because of slope. Erosion is a serious hazard if slopes are bare of vegetation. Conservation tillage, crop rotation with long-term hay crops or sod, using cover crops, returning crop residue to the soil, and installing diversions help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The main management concerns are the moderate erosion hazard and the equipment limitation, both because of slope. Careful management helps to control erosion during logging operations.

Slope is a limitation of this soil for most urban uses. Potential for habitat is good for woodland wildlife.

The capability subclass is IVe.

NmE—Nellis and Madrid soils, steep. This map unit consists of steep, very deep, well drained Nellis and Madrid soils mainly on the sides of hills and ridges on uplands. Areas range from 20 to 100 acres. Some areas are mostly Nellis soils, some are mostly Madrid soils, and some consist of both. Slope ranges from 25 to 50 percent.

The total acreage of the map unit is about 60 percent Nellis soils, 30 percent Madrid soils, and 10 percent other soils. These soils were mapped together because they are similar in use and management.

Typically, the surface layer of the Nellis soil is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam to a depth of about 21 inches. The

substratum is brown to light brownish gray gravelly fine sandy loam to a depth of 60 inches or more.

Typically, the surface layer of the Madrid soil is grayish brown sandy loam about 8 inches thick. In the upper part the subsoil is brown sandy loam to dark brown fine sandy loam about 11 inches thick. In the lower part it is dark brown fine sandy loam about 6 inches thick. The substratum is dark brown, firm gravelly fine sandy loam to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Lowville soils. Also included are small severely eroded areas. Also included are areas where few stones or boulders are on the surface and areas of rock outcrops.

The rate of water movement through the Nellis soil is moderate in the subsoil and moderately slow or slow in the substratum, and through the Madrid soil is moderate in the surface layer and the upper part of the subsoil, moderately slow or moderate in the lower part of the subsoil, and moderately slow in the substratum. Runoff is rapid. The capacity of these soils to store water available for plant growth is high. The surface layer is moderately acid to neutral in the Nellis soils and strongly acid to neutral in the Madrid soils.

Most areas of these soils are woodland or are reverting to brush. Some areas are in permanent pasture or are idle.

These soils are not suited to cultivated crops because of slope.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too dry or too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of these soils for sugar maple is moderate. The main management concerns are the moderate erosion hazard and the moderate equipment limitation, both because of slope. Careful management is needed to control erosion during logging operations.

Slope is a limitation of these soils for urban use. Potential for habitat is good for woodland wildlife.

The capability subclass is VIIe.

Nn—Newstead silt loam. This is a nearly level, moderately deep, somewhat poorly drained and poorly drained soil in long, narrow or large, irregularly shaped areas on uplands. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent. Areas range from 10 to 100 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 14 inches thick. It is grayish brown silt loam in the upper part and grayish brown gravelly loam in the lower part. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 30 inches. Gray limestone bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of very deep, somewhat poorly drained and poorly drained Massena soils and very poorly drained and poorly drained Sun soils. Also included are small areas of somewhat excessively drained and excessively drained Benson soils and well drained and moderately well drained Galway soils on the drier parts of the landscape. Also included are small stony areas.

The seasonal high water table in this Newstead soil is commonly within 1/2 to 1 foot of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer, the subsoil, and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer ranges from moderately acid to mildly alkaline.

Most areas of this soil are used for hay crops or pasture. Some areas are forest or are reverting to brush. This is a prime farmland soil, where drained.

This soil is moderately suited to cultivated crops. The seasonal high water table is the main limitation. Drainage is needed if the soil is used for cultivated crops. Using cover crops and returning crop residue and applying manure to the soil help to improve soil tilth in the surface layer and to maintain the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table, depth to bedrock, and potential frost action are limitations of this soil for urban uses. Potential for habitat is fair for wetland wildlife.

The capability subclass is IIIw.

NoA—Niagara silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil in smooth, broad, irregularly shaped areas on lowland plains. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 22 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown to dark brown silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Collamer soils, poorly drained and very poorly drained Canandaigua soils, and, where bedrock is at a depth of 40 to 72 inches, Niagara soils.

Also included are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions.

The seasonal high water table in this Niagara soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are used as pasture or forest.

This soil is moderately suited to crops. The main limitation is the seasonal high water table. If the soil is properly managed, row crops can be grown intensively. Drainage is needed if the soil is used for cultivated crops. Conservation tillage, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the soil, and potential frost action are limitations of this soil for urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

NoB—Niagara silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil in concave, oblong areas on lowland plains. Areas range from 10 to 40 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 22 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Collamer soils, poorly drained and very poorly drained Canandaigua soils, and Niagara soils where bedrock is at a depth of 40 to 72 inches. Also included are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions.

The seasonal high water table in this Niagara soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, if drained. Some areas are used as pasture or forest.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. If the soil is properly managed, row crops can be grown intensively. Drainage is needed if the soil is used for cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, rate of water movement through the soil, and potential frost action are limitations of this soil for urban use. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

NpB—Niagara silt loam, bedrock substratum, 2 to 6 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil in concave or undulating areas on lake plains. Areas range from 10 to 20 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsurface layer is mottled, dark grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 16 inches thick. It is brown to dark brown silt loam in the upper part and dark grayish brown silt loam in the lower part. The substratum is mottled, dark grayish brown silt loam to a depth of 48 inches. Bedrock is at a depth of 48 inches.

Included with this soil in mapping are small areas of moderately well drained Collamer soils and, where bedrock is at a depth of 40 to 72 inches, poorly drained and very poorly drained Canandaigua and Niagara soils.

Also included are small areas of moderately deep, poorly drained and very poorly drained Guffin soils in depressions.

The seasonal high water table in this Niagara soil is commonly within 1/2 to 1 1/2 feet of the surface from December through May. Bedrock is at a depth of 40 to 72 inches. The rate of water movement through the soil is moderate in the surface layer and moderately slow in the subsoil and the substratum. Runoff is slow or medium. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are used as pasture or forest.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. If it is properly managed and if drainage is installed, row crops can be grown intensively. Erosion is a moderate hazard if slopes are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to improve soil tilth, to maintain the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and somewhat restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table, bedrock at 40 to 72 inches, rate of water movement through the soil, and potential frost action are limitations of this soil for urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

Pa—Palms muck. This is a nearly level, very deep, very poorly drained soil mainly in smooth, rounded, or linear depressions and bogs. Areas range from 20 to 100 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is black muck about 16 inches thick. The subsurface layers are black to dark reddish brown muck about 29 inches thick. Below that, there is dark gray, light sandy clay loam to a depth of 60 inches.

Included with this soil in mapping are small areas of Carlisle soils in some bog positions. Also included are small areas of marl in the substratum of the Henderson Pond bog and Six Town Pond bog. Also included are small areas underlain with sand and clay. Also included, where bogs are adjacent to remnant beaches and terraces, are small areas of sandy and loamy soils.

In some areas this soil is commonly ponded for long periods from November through May. In other areas the seasonal high water table is commonly within 12 inches of the surface. The rate of water movement through the soil ranges from moderately slow to moderately rapid in the organic layers and moderately slow or moderate in the mineral substratum. The soil is ponded or runoff is very slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

This soil is mostly woodland or brushland.

This soil is not suited to cultivated crops or pasture because of prolonged wetness, unless it is drained. In most areas it is not feasible to drain the soil for agricultural use.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table and ponding limit equipment use, cause high seedling mortality, and restrict rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table or ponding, potential frost action, and the high content of humus are major limitations to use of this soil for urban use. Potential for habitat is good for wetland wildlife.

The capability subclass is Vw.

PhA—Phelps gravelly loam, 0 to 3 percent slopes. This is a nearly level, very deep, moderately well drained soil mainly in long, oval areas or fan-shaped areas in valleys and on plains. Areas range from 15 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 7 inches thick. The subsoil is about 23 inches thick. It is brown gravelly loam in the upper part and mottled, yellowish brown to dark yellowish brown gravelly loam in the lower part. The substratum is mottled and extends to a depth of 60 inches or more. It is grayish brown, very gravelly sandy loam in the upper part and gray to light gray, stratified sand and gravel in the lower part.

Included with this soil in mapping are small areas of excessively drained Groton soils on convex knolls and very poorly drained Halsey soils in nearly flat areas and in depressions. Also included are small areas of poorly drained and somewhat poorly drained Junius soils. Also included are small gravel pits.

The seasonal high water table in this Phelps soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the surface layer and the subsoil and moderately rapid or rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil are used for cultivated crops. Some areas are in urban use.

This soil is well suited to most commonly grown cultivated crops. In some years the seasonal high water table slightly delays planting and harvesting crops. Drainage is commonly needed for wet spots. Crop rotation, using winter crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture seeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and seepage are limitations to use of this soil for sanitary facilities and to most other urban uses. Seepage and inadequate filtration of the effluent can result in ground water contamination. Potential frost action is a limitation for local roads and streets. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIw.

PhB—Phelps gravelly loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in long, irregularly shaped, concave, sloping areas on terraces. Areas range from 15 to 40 acres.

Typically, the surface layer is very dark grayish brown gravelly loam about 7 inches thick. The subsoil is about 23 inches thick. It is brown gravelly loam in the upper part and mottled, yellowish brown to dark yellowish brown gravelly loam in the lower part. The substratum is mottled and extends to a depth of 60 inches or more. It is grayish brown very gravelly sandy loam in the upper part and gray to light gray, stratified sand and gravel in the lower part.

Included with this soil in mapping are small areas of excessively drained Groton soils on knolls and very poorly drained Halsey soils in flat areas and in depressions. Also included are small areas of poorly drained and somewhat poorly drained Junius soils in undulating, seasonally wet areas. Also included are small gravel pits.

The seasonal high water table in this Phelps soil is commonly within 1 1/2 to 2 feet of the surface from March through May. The rate of water movement through the soil is moderate in the subsoil and moderately rapid or rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this prime farmland soil are used for cultivated crops. Some areas are used as pasture or are woodland. A few areas are in urban use.

This soil is well suited to most commonly grown crops. Erosion is a moderate hazard if slopes are bare of vegetation. The seasonal high water table slightly delays planting and harvesting crops. Drainage is commonly needed for wet spots. Contour farming, crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture seeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and seepage are limitations to use of this soil for sanitary facilities and to most other urban uses. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Potential frost action is a limitation for local roads and streets. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIe.

PkB—Pinckney-Ensley silt loams, undulating. This map unit consists of very deep, well drained, moderately well drained, poorly drained, and very poorly drained soils in undulating areas and depressions on uplands. Areas range from 20 to 100 acres. Slope ranges from 0 to 6 percent.

This unit is about 45 percent Pinckney soil, 40 percent Ensley soil, and 15 percent other soils. These soils are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

Typically, the Pinckney soil has a surface layer of dark brown to dark grayish brown silt loam about 7 inches thick. In the upper part the subsoil is yellowish brown and dark yellowish brown loam about 15 inches thick. In the lower part, at a depth of 22 to 64 inches, it is a layer of brown to dark grayish brown, firm and brittle shaly loam called a fragipan. The substratum is dark brown, shaly loam to a depth of 72 inches or more.

Typically, the Ensley soil has a surface layer of very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 18 inches thick. It is grayish brown to yellowish brown sandy loam in the upper part and grayish brown gravelly sandy loam in the lower part. The substratum is mottled, grayish brown gravelly sandy loam to a depth of 72 inches or more.

Included with this unit in mapping are small areas of well drained Bice soils in gently sloping and rolling areas. Also included are small areas of Carbondale soils in

bogs. Also included are small marshes and areas of soils that have steep slopes.

The seasonal high water table in the Pinckney soil is 1 1/2 to 2 feet below the surface from February through May. The firm layer, or fragipan, between a depth of 22 and 64 inches restricts plant roots and the downward movement of water. The rate of water movement through the soil is moderate above the fragipan, slow or very slow in the fragipan, and slow or moderately slow in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

The seasonal high water table in the Ensley soil is within 1/2 foot of the surface from November through June. In some places the soil is ponded. The rate of water movement through the soil is moderately rapid in the surface layer, moderate in the subsoil, and moderately rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is low or moderate. The surface layer is slightly acid to mildly alkaline.

Most areas of these soils are woodland. Some areas are reverting to brush. A few areas are in pasture.

These soils are poorly suited to cultivated crops. The main limitations are the short growing season and the seasonal high water table or ponding. If the soils are drained, the response to use and management is improved. In drained areas and in cropped areas, returning crop residue, using cover crops, and applying manure to the soil help to control erosion and to maintain soil tilth in the surface layer and the content of organic matter.

If used for pasture, these soils require a management program that minimizes overgrazing and restricts grazing when the soils are too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture seeding, and applying lime and fertilizers.

Potential productivity is moderate for sugar maple on the Pinckney soil and for red maple on the Ensley soil. On the Pinckney soil, there are few or no major management concerns for woodland use. On the Ensley soil, the prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

On the Pinckney soil, the seasonal high water table and rate of water movement in the fragipan are limitations to use as sites for septic tank absorption fields and sanitary landfills. The seasonal high water table and potential frost action are limitations for building site development. On the Ensley soil, the prolonged seasonal high water table, potential frost action, and seepage are limitations to use as sites for sanitary facilities and buildings. Potential for habitat is good for openland wildlife on the Pinckney soil and good for wetland wildlife on the Ensley soil.

The capability subclass is IIIw.

Pm—Pits, quarry. This map unit consists of excavations primarily in bedrock. Most excavations are in sedimentary rock. The pits or quarries were created by removing rock for use in construction. The quarries are 3 to 50 feet deep. The sides are generally steep, and the floor is relatively level. The excavations are commonly irregular in shape. Areas range from 2 to 150 acres.

Included with this unit in mapping are small areas of pits used as dumps.

Most areas of Pits, quarry, have been abandoned, are reverting to scattered brush, or are used as dumps. In a few pits, the bottom is ponded.

These areas are generally not suited to use as cropland, pasture, woodland, or sites for urban development. It is generally not feasible to reclaim most sites for such uses. Onsite investigation of each site is needed for any considered use. Some areas provide nesting sites for small birds and den sites for small animals. Also, some areas provide good sites for viewing geologic strata.

A capability subclass has not been assigned.

Pn—Pits, sand and gravel. This map unit consists of excavations primarily in gravelly and sandy deposits. The pits were made when gravel and sand were removed for use in construction and roadbuilding. Depth of the pits ranges from a few feet to 50 feet. The sides of the pits are generally steep, and the floor is relatively level. The pits are generally round or rectangular in shape. Areas range from 2 to 100 acres.

Included in mapping are small areas used as dump sites. Also included are small areas of rock outcrop.

The seasonal high water table is at different depths from site to site, but is generally at a depth of more than 6 feet. The rate of water movement through the pit floor differs from site to site, but mainly is rapid or very rapid. The capacity to store water available for plant growth also differs, but mainly is low or very low.

Most areas of Pits, sand and gravel, are mined for sand and gravel. Some areas have been abandoned and are reverting to brush. A few pits are ponded.

The pit areas, unless filled and smoothed, are generally not suited to cropland, pasture, or woodland. Onsite investigation is needed to determine the feasibility for these uses.

The pit areas differ greatly in potential for urban use. Onsite investigation is needed on each site. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination.

A capability subclass has not been assigned.

PoB—Plainfield sand, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, excessively drained soil mainly in broad, undulating areas on plains and terraces. Areas range from 40 to 100 acres.

Typically, the surface layer is dark brown sand about 8 inches thick. The subsoil is strong brown to yellowish brown sand about 20 inches thick. The substratum is yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Deerfield soils in low-lying areas. Also included are well drained Agawam soils and excessively drained Windsor soils. Also included are small sand pits and blowout areas.

The rate of water movement through this Plainfield soil is rapid. Runoff is slow. The capacity of the soil to store water available for plant growth is low or very low. The surface layer is very strongly acid to neutral.

Most areas of this soil are in federal and state land ownership. Some areas are in urban use. Other areas have been reforested to conifers or are reverting to brush. A few areas are in pasture.

This soil is not suited to cultivated crops unless irrigated. It is very droughty during the growing season because of the sandy texture and rapid rate of water movement through the soil. Wind erosion is a severe hazard if the soil is bare of vegetation.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for northern red oak is moderate. The major management concern is high seedling mortality caused by low capacity to store water available for plant growth.

Rate of water movement through the soil, seepage, and the sandy texture are limitations to use of this soil as sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability and droughty conditions are limitations for shallow excavations and for lawns and landscaping. There are few or no limitations for other kinds of community development. Potential for habitat is poor for wildlife.

The capability subclass is VIs.

PoC—Plainfield sand, rolling. This is a rolling, very deep, excessively drained soil mainly on low-lying ridges and knolls, plains, and terraces. Areas range from 40 to 100 acres. Slope ranges from 8 to 15 percent.

Typically, the surface layer is dark brown sand about 8 inches thick. The subsoil is strong brown to yellowish brown sand about 20 inches thick. The substratum is yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Deerfield soils in low-lying, flat areas. Also included are well drained Agawam soils and excessively drained Windsor soils. Also included are small sand pits and blowout areas.

The rate of water movement through this Plainfield soil is rapid. Runoff is slow. The capacity of the soil to store water available for plant growth is low or very low. The surface layer is very strongly acid to neutral.

Most areas of this soil are in federal and state land ownership. Some areas are in urban use. Some areas have been reforested to conifers or are reverting to brush. A few areas are in pasture or are sand pit operations.

This soil is not suited to cultivated crops unless irrigated. The sandy texture and rate of water movement through the soil causes serious droughty conditions during the growing season. Wind erosion is a severe hazard if the soil is bare of vegetation.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for northern red oak is moderate. The major management concern is high seedling mortality caused by low capacity to store water available for plant growth.

Rate of water movement through the soil, seepage, the sandy texture, and in places slope are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability and droughty conditions are limitations for shallow excavations, and lawns and landscaping. Slope is a limitation for other urban uses. Potential for wildlife habitat is poor.

The capability subclass is VIs.

PpD—Plainfield and Windsor soils, hilly. These are hilly, very deep, excessively drained soils on ridges and knolls on plains. Areas range from 20 to 80 acres. Slope ranges from 15 to 25 percent.

This map unit is about 45 percent Plainfield soils, 45 percent Windsor soils, and 10 percent other soils. Some areas are mostly Plainfield soils, some mostly Windsor soils, and some consist of both. The Plainfield and Windsor soils were mapped together because they are similar in use and management.

Typically, the surface layer of the Plainfield soils is dark brown sand about 8 inches thick. The subsoil is strong brown to yellowish brown sand about 20 inches thick. The substratum is yellowish brown sand to a depth of 60 inches or more.

Typically, the surface layer of the Windsor soils is very dark grayish brown loamy fine sand about 5 inches thick. The subsoil is about 23 inches thick. It is strong brown to yellowish brown loamy fine sand in the upper part and brownish yellow loamy sand in the lower part. The substratum is light yellowish brown fine sand to a depth of 60 inches or more.

Included with these soils in mapping are small areas of Plainfield and Windsor soils that are severely wind

eroded. Also included in some units are small sand pits, blown-out areas, or small areas where stones or boulders are on the surface.

The rate of water movement is rapid through the Plainfield soils and rapid or very rapid through the Windsor soils. Runoff is slow or medium. The capacity of the soils to store water available for plant growth is low or very low. The surface layer is very strongly acid to neutral in the Plainfield soils and very strongly acid to moderately acid in the Windsor soils.

Most areas are reverting to brush or have been reforested. Some areas are a source of sand for use in roadbuilding and construction. Some areas are under federal or state land ownership.

These soils are not suited to crops or pasture because of the moderately steep slope, the sandy texture, and severe droughtiness. They are best suited to use as woodland.

Potential productivity of these soils for northern red oak is moderate. Slope limits equipment use. The sandy texture and droughtiness cause high seedling mortality.

The moderately steep slope is a serious limitation of these soils for urban use. Some other limitations are seepage, sandy texture, poor stability, and droughtiness. On sites for sanitary facilities, seepage and inadequate filtration of the effluent can result in ground water contamination. Potential for wildlife habitat is poor.

The capability subclass is VIIs.

Ps—Pootatuck fine sandy loam. This is a nearly level, very deep, moderately well drained soil mainly in oblong or long, narrow areas on flood plains near major streams and rivers. Areas range from 5 to 25 acres. Slope ranges from 0 to 3 percent, but is dominantly 1 or 2 percent.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The subsoil is about 16 inches thick. It is yellowish brown sandy loam in the upper part and mottled, brown sandy loam in the lower part. The substratum is dark yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of poorly drained and very poorly drained Wayland soils in wet areas or in depressions. Also included, in a few places, are small areas of soils that are similar to this Pootatuck soil but are well drained. Also included are Fluvaquents and Udifluvents.

The seasonal high water table in this Pootatuck soil is commonly within 1 1/2 to 3 feet of the surface from November through April. The soil is subject to frequent flooding. The rate of water movement through the soil is moderate or moderately rapid in the surface layer and the subsoil and rapid or very rapid in the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to slightly acid.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are used for vegetable crops.

This soil is well suited to cultivated crops. The seasonal high water table and flooding somewhat delay planting and harvesting crops. Random drainage is commonly needed if the soil is used for cultivated crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and restricted grazing during periods of flooding.

Potential productivity of this soil for eastern white pine is very high. There are no major management concerns for woodland use.

The seasonal high water table, frequent flooding, and rate of water movement through the soil are limitations to use of the soil as sites for sanitary facilities and to many other urban uses. On sites for sanitary facilities, seepage and the inadequate filtration of effluent can result in ground water contamination. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IIw.

QeB—Quetico-Rock outcrop complex, 2 to 8 percent slopes. This map unit consists of nearly level to gently sloping, very shallow, somewhat excessively drained Quetico soil and areas of Rock outcrop. The Quetico soil is in a thin mantle of till or residuum from local bedrock. Rock outcrop is mainly Potsdam sandstone, gneiss, granite, and schist and partly dolomite. Areas of this soil and Rock outcrop are mainly in broad, undulating areas on the tops of bedrock terraces and on plains. Areas range from 10 to 80 acres. Slope ranges from 0 to 8 percent.

This unit is about 55 percent Quetico soil, 25 percent Rock outcrop, and 20 percent other soils. This soil and areas of Rock outcrop are in such an intricate pattern that they could not be mapped separately at the scale selected for mapping.

Typically, the Quetico soil has a surface layer of dark brown loam about 4 inches thick. The subsoil is dark reddish brown gravelly sandy loam to a depth of 9 inches. Potsdam bedrock is below a depth of 9 inches.

Typically, Rock outcrop is poorly cemented sandstone that is buff colored and sandy in texture.

Included with this unit in mapping are small areas of shallow, well drained Insula soils on ridges, shallow, poorly drained and very poorly drained Ruse soils in low flat areas, and moderately deep, well drained and

somewhat excessively drained Millsite soils on bedrock-controlled ridges. Also included are small areas of moderately deep, somewhat poorly drained Chaumont soils in nearly flat areas between bedrock ridges and small areas of poorly drained and very poorly drained Guffin soils in depressions. Also included are small areas where stones and boulders are on the surface.

Bedrock in the Quetico soil is at a depth of less than 10 inches. The rate of water movement through the soil is moderate. Runoff is medium or rapid. The capacity of the soil to store available water for plant growth is very low. The surface layer is very strongly acid or strongly acid.

Most areas of the Quetico soil are in pasture, are reverting to brush, or are poor quality woodland. The soil is not suited to cultivated row crops because of depth to bedrock and rock outcrops. A few areas near the St. Lawrence River are in recreation use (fig. 8).

Potential productivity of the Quetico soil for eastern white pine is moderately high. Depth to bedrock and rock outcrops cause a serious erosion hazard and moderate seedling mortality, and seriously restrict rooting depth, resulting in uprooting of trees during windy periods.

Depth to bedrock and rock outcrops are limitations of the Quetico soil for urban use. Potential for habitat for wildlife is poor.

The capability subclass is VIIs.

RhA—Rhinebeck silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, broad, irregularly shaped areas on lake plains and at the margins of uplands. Areas range from 5 to 100 acres.

Typically, the surface layer is dark grayish brown silty loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 14 inches thick. It is brown silty clay in the upper part and grayish brown silty clay in the lower part. The substratum is grayish brown silty clay and is varved with silt and very fine sand, to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Hudson soils on ridges and poorly drained and very poorly drained Madalin soils in depressions. Also included, where bedrock is near the surface, are small areas of moderately deep, somewhat

Figure 8.—Quetico-Rock outcrop complex, 2 to 8 percent slopes, is common along the St. Lawrence River where the main land use is for recreation activities.

poorly drained Chaumont soils. Also included are small sandy areas, marshy areas, and areas of rock outcrop.

The seasonal high water table in this Rhinebeck soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. This is a prime farmland soil, where drained. A few areas are idle or have been planted to conifers. Some areas are pasture, woodland, or in urban use.

This soil is moderately suited to cultivated crops. Drainage is needed if the soil is used for crops. Land smoothing and surface drainage with suitable outlets are effective in draining the soil for cultivated crops. Plowing in fall is common. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, ridge tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use.

The seasonal high water table, the clayey texture, and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for most sanitary facilities. There are few or no limitations for sewage lagoons. The seasonal high water table, poor stability, low soil strength, and potential frost action are limitations for most other urban uses. The potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

RhB—Rhinebeck silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil mainly in concave, sloping areas on lowland plains and at the margins of uplands. Areas range from 5 to 100 acres.

Typically, the surface layer is dark grayish brown silty loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 14 inches thick. It is brown silty clay in the upper part and grayish brown silty clay in the lower part. The substratum is grayish brown silty clay varved with silt and very fine sand, to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Hudson soils on ridges and poorly drained and very poorly drained Madalin soils in depressions. Also included are small areas of moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils. Also included are small sandy areas, marshes, and areas of rock outcrop.

The seasonal high water table in this Rhinebeck soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops in dairy farming. A few areas are idle or have been planted to conifers. Some areas are pasture, woodland, or in urban use.

This soil is moderately suited to cultivated crops. Drainage is commonly needed if the soil is used for crops. Land smoothing and surface drains with suitable outlets are effective in draining the soil for crops. Plowing in fall is common. Soil erosion is a serious hazard, especially on long slopes and if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Conservation tillage, ridge tillage, till and plant on the contour on short slopes and stripcropping on the contour on long slopes, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for red maple is moderate. The seasonal high water table somewhat limits equipment use.

The seasonal high water table, the clayey texture, and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for most sanitary facilities. Slope is a limitation for sewage lagoons. Poor stability, low soil strength, and potential frost action are limitations for most other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

RkC—Rhinebeck-Chatfield-Rock outcrop complex, rolling. This map unit consists of very deep, somewhat poorly drained Rhinebeck soil in glacial lake sediments, moderately deep, well drained and somewhat

excessively drained Chatfield soil in glacial till, and areas of Rock outcrop. Areas of these soils and Rock outcrop are mainly on groups of rolling ridges and knobs cored with bedrock in what is otherwise a lake plain. The Rhinebeck soil is between the ridges and knobs and in places lies in grooves and troughs within the ridges and knobs. The Chatfield soil lies mainly on the sides of ridges and knobs intermingled with bedrock exposures. The ridges and knobs are generally oriented NNE-SSW along the long axis. Most areas range from 15 to 100 acres. Slope ranges from 5 to 15 percent, but is dominantly 8 to 15 percent.

This unit is about 45 percent Rhinebeck soil, 25 percent Chatfield soil, 10 percent Rock outcrop, and 20 percent other soils. These soils and Rock outcrop are in such an intricate pattern that they could not be mapped separately at the scale selected for mapping.

Typically, the surface layer of the Rhinebeck soil is dark grayish brown silt loam about 8 inches thick. The subsurface layer is mottled, grayish brown silt loam about 4 inches thick. The subsoil is mottled and about 14 inches thick. It is brown silty clay in the upper part and grayish brown silty clay in the lower part. The substratum is grayish brown silty clay varved with silt and very fine sand, to a depth of 60 inches or more.

Typically, the surface layer of the Chatfield soil is dark brown loam about 4 inches thick. The subsoil is about 16 inches thick. It is dark brown in the upper part and yellowish brown loam in the lower part. The substratum is brown sandy loam to a depth of 30 inches. Gneiss is at a depth of 30 inches or more.

Typically, Rock outcrop consists of exposures of mainly granite, gneiss, or sandstone and, in places, partly marble.

Included with these soils in mapping are small areas of shallow, well drained and somewhat excessively drained Hollis soils, very shallow, excessively drained and somewhat excessively drained Galoo, acid, soils, and very deep, well drained Bice soils. Also included, intermingled mainly with the Rhinebeck soil, are areas of moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils. Also included are small areas of poorly drained and very poorly drained Madalin soils and very poorly drained Livingston soils in low-lying areas and depressions. Also included are small areas of bedrock escarpments and small areas of steeper soils than these Rhinebeck and Chatfield soils.

The seasonal high water table in the Rhinebeck soil is commonly within 1/2 to 1 1/2 feet of the surface from January through May. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to neutral.

Depth to bedrock in the Chatfield soil is 20 to 40 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of these soils are permanent pasture or woodland or are reverting to brush. Some areas are idle.

These soils generally are not suited to cultivated crops. The main limitations are depth to bedrock, rock outcrops, and the included areas of bedrock escarpments and steeper soils. Another limitation is the close proximity of the ridges. The soils are in areas not suited to cultivation with large machinery. Erosion is a moderate hazard if slopes are bare of vegetation.

If used for pasture, these soils require a management program that includes proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion. Rock outcrops are a management concern.

Potential productivity of the Rhinebeck and Chatfield soils for sugar maple is moderate. The ridges and rock-cored knobs are limitations for woodland use and management. On the Rhinebeck soil, erosion is a moderate hazard and slope somewhat limits equipment use.

The seasonal high water table, the clayey texture, and rate of water movement through the subsoil and the substratum on the Rhinebeck soil and depth to bedrock, seepage, and slope on the Chatfield soil and associated bedrock ridges are limitations on sites for sanitary facilities. The seasonal high water table, poor stability, low soil strength, and potential frost action on the Rhinebeck soil and depth to bedrock, slope, and associated bedrock ridges are limitations to other urban uses. Potential for habitat is good for openland wildlife. Potential for habitat for woodland wildlife is good on the Rhinebeck soil and fair on the Chatfield soil.

The capability subclass is VIs.

Rn—Rhinebeck Variant silty clay loam. This is a nearly level, very deep, and somewhat poorly drained soil mainly on small flats and in slight depressions on flood plains along major streams and rivers. Areas range from 5 to 30 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is mottled and about 25 inches thick. It is strong brown silty clay loam in the upper part and light brownish gray to dark gray silty clay loam in the lower part. The substratum is mottled, gray silty clay that has lenses of fine sand, to a depth of 60 inches or more.

Included with this soil in mapping are small areas of very poorly drained Livingston soils in depressions on flood plains. Also included, where the surface is

inundated for long periods, are small areas of Saprists and Aquents.

From November through May, this Rhinebeck Variant soil is subject to occasional flooding and the seasonal high water table is commonly within a depth of 1/2 to 1 1/2 feet of the surface. The rate of water movement through the soil is moderately slow in the surface layer and slow in the subsoil and the substratum. Runoff is slow, or the soil is flooded. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

In cleared areas, this soil is used mainly for cultivated crops. Other areas are used as pasture or woodland.

Careful management is required if this soil is used for cultivated crops. It is subject to occasional flooding in spring and fall or during periods of high water. In some areas subsurface drainage and streambank protection are needed for cultivated crops. Undrained areas are better suited to long-term hay crops or sod. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table and flooding somewhat limit equipment use.

Flooding, the seasonal high water table, rate of water movement through the subsoil and the substratum, and the clayey texture are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table, flooding, and low soil strength are limitations to other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIIw.

Ru—Ruse gravelly loam, rocky. This is a nearly level, shallow, poorly drained and very poorly drained soil mainly in flat areas and depressions. Rock outcrop covers 0.1 to 1.0 percent of the surface. Bedrock is at a depth of 10 to 20 inches. Areas range from 10 to 100 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 2 percent.

Typically, the surface layer is very dark grayish brown gravelly loam about 6 inches thick. The subsoil is mottled and 10 inches thick. It is brown very gravelly sandy loam to a depth of 16 inches. Bedrock of Theresa sandstone and dolomite is at a depth of 16 inches or more.

Included with this soil in mapping are small areas of shallow, well drained Insula soils and moderately deep, well drained and somewhat excessively drained Millsite soils on knolls and convex ridges. Also included, where bedrock is very deep, are small areas of deep, somewhat poorly drained Niagara, Rhinebeck, and Kingsbury soils. Also included are small stony areas and marshy areas.

The seasonal high water table is commonly within 1 foot of the surface from November through May. In some areas the soil is ponded for brief periods. Bedrock is at a depth of 10 to 20 inches. The rate of water movement through the soil is moderate or moderately rapid. Runoff is very slow. The capacity of the soil to store water available for plant growth is low. The surface layer is moderately acid or slightly acid.

Most areas of this soil are permanent pasture, are reverting to brush, or are woodland.

Unless drained, this soil is not suited to cultivated crops and hay. The main limitations are the prolonged seasonal high water table, depth to bedrock, and rock outcrops. Drainage is generally not practical for cultivated crops because of depth to bedrock.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, reseeding with water-tolerant grasses, and application of lime and fertilizers.

Potential productivity of this soil for balsam fir is moderately high. The prolonged seasonal high water table and rock outcrops restrict equipment use, cause high seedling mortality, and restrict rooting depth, which can result in uprooting of trees during windy periods.

The prolonged seasonal high water table, ponding, depth to bedrock, seepage, and potential frost action are limitations of this soil for urban use. Potential for habitat for wetland wildlife is fair.

The capability subclass is Vw.

Sa—Saprists and Aquents, ponded. This map unit consists of level, very deep, very poorly drained organic and mineral soils in freshwater marsh areas. In Jefferson County they are in shallow, ponded areas that border Lake Ontario, the St. Lawrence River, the Indian River, and other lakes, ponds, and open bodies of water. The level of water covering these soils fluctuates with the water level of the adjacent bodies of open water, such as the fluctuating water level of Lake Ontario. Most areas are covered with water throughout the year. Many areas are natural depressions, and some areas have been created by man or beaver dams. The dominant vegetation is cattails, rushes, grasses, and other water-tolerant, herbaceous plants. The only trees are those near the edge of very shallow water. Slope is 0 or 1 percent. Areas are commonly oval and mainly 5 to 25 acres.

Some areas of the unit are Saprists (organic soils), some areas are Aquents (mineral soils), and many areas consist of both. The unit is about 60 percent Saprists,

about 30 percent Aquents, and about 10 percent soils of minor extent.

Saprists consist of black, well decomposed, organic deposits more than 16 inches thick that overlie gray clay, silt, or sand. Depth to bedrock is generally more than 60 inches.

Aquents have a very dark surface layer of silty clay loam to gravelly loamy sand, about 7 inches thick. The substratum is very dark gray to grayish brown silty clay loam to sand, to a depth of 60 inches or more.

Included with these soils in mapping are small areas of lake beaches, Fluvaquents, and Udifluvents.

Soil features of Saprists and Aquents, ponded, that are important to use and management, such as the seasonal high water table, rate of water movement through these soils, surface runoff, moisture available for plant growth, and reaction, are highly variable within short distances. Ponding is a limitation for most uses except as habitat for wetland wildlife.

Onsite investigation is needed to determine the feasibility for most uses. In most places, these soils are extremely difficult to drain because the water level is controlled by the adjacent, open bodies of water. They generally provide excellent habitat for wetland wildlife, including beaver, muskrat, fish, and waterfowl. In some areas wildlife habitat can be improved by constructing islands and nesting boxes and planting food-producing, wetland shrubs.

The capability subclass is VIIIw.

Sc—Scarboro mucky loamy fine sand. This is a nearly level, very deep, very poorly drained soil mainly in flat areas and depressions on outwash plains and terraces. Areas range from 15 to 100 acres. Slope ranges from 0 to 3 percent, but is dominantly less than 1 percent.

Typically, the surface layer is black mucky loamy fine sand about 9 inches thick. The subsurface layer is mottled grayish brown loamy fine sand about 3 inches thick. The substratum is mottled. It is dark grayish brown loamy sand from a depth of 12 to 24 inches and dark grayish brown or dark gray medium and fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Deerfield soils and somewhat poorly drained and poorly drained Warnham soils on the higher parts of the landscape.

The seasonal high water table in this Scarboro soil is commonly between the soil surface and a depth of 1 foot throughout the year. The rate of water movement through the soil is rapid. Runoff is slow and in some areas, the soil is ponded for short periods. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this soil are woodland or permanent pasture or are reverting to brush.

Unless drained, this soil is generally not suited to cultivated crops. Most areas are difficult to drain because suitable outlets are not available.

If used for pasture, this soil requires a pasture management program that prevents overgrazing and grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding with grasses that are tolerant of periods of wetness, and application of lime and fertilizers.

Potential productivity of this soil for eastern white pine is high. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, which can result in increased uprooting of trees during windy periods.

The prolonged seasonal high water table, ponding of surface water, excess humus, seepage, and the sandy texture are limitations to use of this soil as sites for sanitary facilities. On sites for sanitary facilities, seepage, inadequate filtration of the effluent, and the prolonged seasonal high water table can result in ground water contamination. Poor stability and potential frost action are additional limitations for urban uses. Potential for habitat for wetland wildlife is fair.

The capability subclass is Vw.

SdA—Scriba gravelly silt loam, 0 to 3 percent slopes. This is a nearly level, very deep, somewhat poorly drained soil mainly in smooth, nearly flat, or slight depressional areas on upland till plains. Areas range from 10 to 60 acres.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 7 inches thick. The subsurface layer is mottled and about 4 inches thick. It is grayish brown gravelly silt loam. The subsoil is mottled and about 16 inches thick. In the upper part it is brown gravelly loam. In the lower part it is a layer of brown gravelly loam called a fragipan. The substratum is mottled, dark grayish brown very gravelly fine sandy loam to a depth of 60 inches or more. It is firm and massive.

Included with this soil in mapping are small areas of moderately well drained Ira soils on knolls and ridges and very poorly drained and poorly drained Sun soils in depressions. Also included are small stony areas and wet areas. These included soils are in areas less than 3 acres in size and make up 10 to 20 percent of the map unit.

The seasonal high water table in this Scriba soil is commonly within 1/2 to 1 1/2 feet of the surface in February and March. The very firm, brittle layer, or fragipan, at a depth of 17 to 27 inches restricts rooting and the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and slow in the very firm, brittle layer and in the substratum. Runoff is medium. The capacity of the soil to store water available

for plant growth is low. The surface layer is extremely acid to slightly acid.

Most areas of this soil are used for cultivated crops. Some areas are pasture and woodland.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. Drainage is commonly needed where the soil is used for crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities, except sewage lagoons. There are no limitations for sewage lagoons. The seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat is fair for openland wildlife and poor for woodland wildlife.

The capability subclass is IIIw.

SdB—Scriba gravelly silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, somewhat poorly drained soil mainly in short, concave, sloping areas on upland till plains. Areas range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 7 inches thick. The subsurface layer is mottled and about 4 inches thick. It is grayish brown gravelly silt loam. The subsoil is mottled and about 16 inches thick. In the upper part it is brown gravelly loam. In the lower part it is a brown loam called a fragipan. The substratum is mottled, dark grayish brown very gravelly fine sandy loam to a depth of 60 inches or more. It is massive and firm.

Included with this soil in mapping are small areas of moderately well drained Ira soils on knolls and areas of very poorly drained and poorly drained Sun soils in depressions. Also included are small stony areas and wet areas.

The seasonal high water table in this Scriba soil is commonly within 1/2 to 1 1/2 feet of the surface in February and March. The very firm, brittle layer, or fragipan, at a depth of 17 to 27 inches restricts rooting and the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and slow in the very firm, brittle layer and in the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is low. The surface layer is extremely acid to slightly acid.

Most areas of this soil are used for cultivated crops. Some areas are pasture or woodland.

This soil is moderately suited to cultivated crops. The main limitation is the seasonal high water table. Drainage is commonly needed if the soil is used for crops. Erosion is a hazard if slopes are bare of vegetation. Contour tillage, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for sugar maple is moderate. The seasonal high water table somewhat limits equipment use, causes moderate seedling mortality, and restricts rooting depth, which results in uprooting of trees during windy periods.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for most sanitary facilities. Slope is a limitation for sewage lagoons. The seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat is fair for openland wildlife and poor for woodland wildlife.

The capability subclass is IIIw.

Sh—Shaker fine sandy loam. This is a nearly level, very deep, poorly drained and somewhat poorly drained soil mainly in smooth, gently undulating areas on lowland plains. Areas range from 5 to 60 acres in size. Slope ranges from 0 to 3 percent.

Typically, the surface layer is very dark gray fine sandy loam about 12 inches thick. The subsurface layer is mottled, pale brown fine sandy loam about 6 inches thick. The subsoil is mottled and about 16 inches thick. It is grayish brown fine sandy loam in the upper part and grayish brown silty clay loam in the lower part. The substratum is grayish brown, massive silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Elmridge soils on convex ridges and very poorly drained Whately soils in depressions. Also included, where the subsoil is not loamy, are small areas of somewhat poorly drained Kingsbury and Rhinebeck soils and poorly drained and very poorly drained Madalin soils.

The seasonal high water table in this Shaker soil is commonly within 1 1/2 feet of the surface from

November through May. The rate of water movement through the soil is moderately rapid in the loamy material and slow or very slow in the clayey material. The capacity of the soil to store water available for plant growth is high. Runoff is slow. The surface layer is strongly acid to slightly acid.

Most areas of this Shaker soil are used for cultivated crops. This is a prime farmland soil, where drained. Some areas are woodland, are reverting to brush, or are in pasture.

Drainage is needed if the soil is used for cultivated crops. Undrained areas are better suited to long-term hay. Conservation tillage, using winter cover crops, crop rotation, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table severely limits equipment use, causes high seedling mortality, and restricts rooting depth, which can result in increased uprooting of trees during windy periods.

The seasonal high water table, the clayey texture, and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities, except sewage lagoons. There are no limitations for sewage lagoons. The seasonal high water table, potential frost action, and low soil strength are limitations for other urban uses. Potential for habitat is fair for both openland and woodland wildlife.

The capability subclass is IIIw.

SoB—Sodus gravelly silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, well drained soil mainly in elongated areas on hilltops and in undulating areas. It is commonly on some parts of recessional moraines. Areas range from 5 to 30 acres.

Typically, the surface layer is dark grayish brown gravelly silt loam about 8 inches thick. The subsoil is about 44 inches thick. In the upper part it is yellowish brown, friable, gravelly sandy loam. In the lower part it is a firm and brittle layer of brown gravelly sandy loam called a fragipan. A thin layer of pale brown gravelly sandy loam separates the upper and lower parts. The substratum is brown gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Ira soils and somewhat poorly drained Scriba soils in the lower areas of the landscape. Also included are small wet spots and very stony areas.

The seasonal high water table in this Sodus soil is commonly within 2 to 3 feet of the surface from February through May. The firm, brittle layer at a depth of 20 to 52 inches restricts rooting and the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and slow in the lower part of the subsoil and the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Many areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. Some areas are pasture or woodland. A few areas are in urban use or are idle.

This soil is well suited to cultivated crops. Erosion is a moderate hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorptions fields. The seasonal high water table, seepage above the fragipan, slope, and potential frost action are limitations for most other urban uses. Potential for habitat is good for both openland and woodland wildlife.

The capability subclass is IIe.

SoC—Sodus gravelly silt loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, well drained soil mainly in linear, convex, sloping areas on the flanks of low hills and ridges. It is also near the edge of lake plains and on some parts of recessional moraines. Areas range from 10 to 30 acres.

Typically, the surface layer is grayish brown gravelly silt loam about 8 inches thick. The subsoil is about 44 inches thick. In the upper part it is yellowish brown, friable, gravelly sandy loam. In the lower part it is a firm and brittle layer of brown gravelly sandy loam called a fragipan. A thin layer of pale brown gravelly sandy loam separates the upper and lower parts. The substratum is firm, brown, gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Ira soils and somewhat poorly drained Scriba soils in low-lying areas and well drained Sodus soils in the more sloping areas of the landscape. Also included are small wet spots and very stony areas.

The seasonal high water table in this Sodus soil is commonly within 2 to 3 feet of the surface layer from February through May. The firm and brittle layer at a depth of 20 to 52 inches restricts rooting of plants and the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and slow in the lower part and in the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Many areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or are idle.

This soil is moderately suited to cultivated crops. Erosion is a severe hazard if slopes are bare of vegetation. In some years the seasonal high water table somewhat delays planting and harvesting crops. Slopes are mostly short and convex. Contour farming and crop rotation with long-term hay crops or sod help to control erosion. Using winter cover crops and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for septic tank absorptions fields. Slope is a limitation for sewage lagoons and small commercial buildings. The seasonal high water table, slope, rate of water movement through the lower part of the subsoil and the substratum, and potential frost action are limitations for most other urban uses. Potential for habitat is good for both openland and woodland wildlife.

The capability subclass is IIIe.

SoD—Sodus gravelly silt loam, 15 to 25 percent slopes. This is a moderately steep, very deep, well drained soil mainly in linear, convex, sloping areas on the flanks or sides of hills and ridges. It is near the edge of the lake plain and on some parts of recessional moraines. Areas range from 5 to 15 acres.

Typically, the surface layer is grayish brown gravelly silt loam about 5 inches thick. The subsoil is about 40 inches thick. In the upper part it is yellowish brown, friable, gravelly sandy loam. In the lower part it is a firm, brittle layer of brown gravelly sandy loam called a fragipan. A thin layer of pale brown gravelly sandy loam separates the upper and lower parts. The substratum is firm, brown, gravelly sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Ira soils in lower concave areas and well drained Sodus soils in the less sloping areas of the landscape. Also included are small stony areas.

The seasonal high water table of this Sodus soil is commonly within 2 to 3 feet of the surface layer from February through May. The firm, brittle layer in the lower part of the subsoil restricts rooting of plants and the movement of water. The rate of water movement through the soil is moderate in the surface layer and the upper part of the subsoil and slow in the lower part of the subsoil and the substratum. Runoff is medium or rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Some areas of this soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are in urban use or are idle.

This soil is poorly suited to cultivated crops. The main limitation is slope. Erosion is a very severe hazard if slopes are bare of vegetation. Slopes are mostly short and convex. Contour farming and crop rotation with long-term hay crops or sod help to control erosion. Using winter cover crops and returning crop residue and adding manure to the soil also help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Slope somewhat limits equipment use. Careful management is needed to control erosion during logging operations.

Slope and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for urban development. Potential for habitat is fair for openland wildlife and good for woodland wildlife.

The capability subclass is IVe.

Su—Sun silt loam. This is a nearly level, very deep, very poorly drained and poorly drained soil mainly in broad, flat or small depressional areas. Areas range from 15 to 60 acres. Slope is less than 3 percent.

Typically, the surface layer is dark gray silt loam about 8 inches thick. The subsoil is mottled and about 14 inches thick. It is gray silt loam in the upper part and brown loam in the lower part. The substratum is mottled, grayish brown gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Scriba soils and moderately well drained Ira soils on the higher parts of the landscape. Also included are small areas of somewhat poorly drained and poorly drained Massena soils. Also included are small areas of very stony soils.

The seasonal high water table in this Sun soil is commonly within 1/2 foot of the surface from November through April. Some areas are ponded. The rate of water movement through the soil is moderate in the surface layer and slow or very slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Most areas are permanent pasture or woodland, or are reverting to brush. Some areas are idle. A few areas are cropland.

This soil is poorly suited for cultivated row crops. Drainage is needed if it is used for cultivated crops. Unless drained, most areas are better suited to long-term hay crops or sod. Crop rotation, using winter cover crops, and returning crop residue and applying manure to the soil help to maintain soil tilth and the content of organic matter.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities, except for sewage lagoons. There are no limitations for sewage lagoons. The prolonged seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat for wetland wildlife is good.

The capability subclass is IVw.

Sv—Sun very stony silt loam. This is a nearly level, very deep, very poorly drained and poorly drained soil mainly in broad, flat or oblong depressional areas. Large stones are 5 to 30 feet apart on the surface. Areas range from 10 to 60 acres. Slope is less than 3 percent.

Typically, the surface layer is dark gray, very stony, silt loam about 8 inches thick. The subsoil is mottled and about 14 inches thick. It is gray silt loam in the upper part and brown loam in the lower part. The substratum is mottled, grayish brown gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained and poorly drained, very stony Massena soils and well drained, very stony Charlton soils on the higher parts of the landscape.

The seasonal high water table in this Sun soil is commonly within 1/2 foot of the surface from November through April. Some areas are ponded. Large stones cover or are in the surface layer. The rate of water movement through the soil is moderate in the surface layer and slow in the subsoil and the substratum. Runoff is slow. The capacity of the soil to store water available for plant growth is moderate. The surface layer is strongly acid to neutral.

Most areas are woodland or are reverting to brush. Some areas are permanent pasture.

This soil is not suitable for cultivated crops because of large stones and the prolonged seasonal high water table.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, and application of lime and fertilizers.

Potential productivity for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

The prolonged seasonal high water table and rate of water movement through the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. The prolonged seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat is good for wetland wildlife.

The capability subclass is VIIs.

Te—Teel silt loam. This is a nearly level, very deep, moderately well drained and somewhat poorly drained soil mainly in oblong or long, smooth areas on flood plains along streams or rivers. Areas range from 5 to 20 acres. Slope is less than 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is mottled, dark grayish brown silt loam about 32 inches thick. The substratum is dark gray silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Hamlin soils in convex areas and poorly drained and very poorly drained Wayland soils in

depressions. Also included are small areas of well drained Blasdell soils on adjacent fans and terraces. Also included, adjacent to streams, are some areas of Fluvaquents and Udifluvents.

The seasonal high water table in this Teel soil is commonly within 1 1/2 to 2 feet of the surface from January through May. The soil is subject to occasional flooding for brief periods from November through May. The rate of water movement through the soil is moderate. Runoff is slow. The capacity of the soil to store water available for plant growth is high. The surface layer is slightly acid or neutral.

Most areas of this prime farmland soil have been cleared and are used for cultivated crops in dairy farming. Some areas are used as pasture or woodland. A few areas are used for vegetable crops.

This soil is well suited to cultivated crops. The seasonal high water table and flooding somewhat delay planting and harvesting crops. Drainage is commonly needed if the soil is used for cultivated crops. Crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to maintain soil tilth and the content of organic matter and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and occasional flooding.

Potential productivity of this soil for sugar maple is moderate. There are no major management concerns for woodland use.

Flooding, the seasonal high water table, and potential frost action are limitations of this soil for most urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIw.

Ua—Udorthents, loamy. These soils consist of reclaimed areas previously used as active sanitary landfills. These areas have been smoothed and sealed off with soil material. They were filled mainly by dumping of trash and garbage. They were intermittently covered with soil material until the sites were no longer used for dumping. The sites were then closed, sealed with several feet of soil material, and smoothed. The average size of areas ranges from about 10 to 40 acres.

These areas are generally devoid of vegetation, although some older reclaimed sites have scattered bushes, grasses, and annuals.

Soil properties are variable. These include depth to the seasonal high water table, rate of water movement through the soils, and the capacity to store water available for plant growth.

Suitability for use for cultivated crops, potential productivity for timber, suitability for sanitary facilities and other community development, and potential for habitat for wildlife are variable. Onsite investigation of each site is needed for any intended land use.

A capability subclass has not been assigned.

Ub—Udorthents, smoothed. These soils formed in cut and fill areas made by human activities. Most of these areas are near industrial sites, urban developments, and other construction sites, such as along Interstate 81 where fill was taken for highway construction. These soils consist of various kinds of excavated earthy material that has been stockpiled for eventual use as fill or top dressing. In addition, they consist of soil and rock material that has been trucked in from other areas and smoothed out. They also consist of the remaining soil material in excavated or cut areas. They are dominantly nearly level to sloping. In some areas they are steeper, particularly at the edge of cuts and along the sides of mounded fill. Areas of the soils are variable in shape and commonly range from 3 to more than 50 acres.

The surface layer is brown or grayish brown and 1 to 12 inches thick. It ranges from very gravelly loamy sand to silty clay loam. Some areas do not have a distinct surface layer. The substratum is commonly light olive brown, brown, or dark yellowish brown. It ranges from very gravelly loamy fine sand to silty clay.

Most areas of these soils are not in a particular land use, and generally support scattered weeds and grasses. A few areas have reverted to brush and tree saplings.

These soils are excessively drained to moderately well drained. Texture, stone content, soil reaction, and depth to bedrock differ considerably from one area to another. Depth to bedrock is generally more than 60 inches. Depth to the seasonal high water table and rate of water movement through the soils vary with topography, degree of compaction, soil texture, and other related factors.

These areas are generally poorly suited to cultivated crops or to use as woodland or urban development. Onsite investigation of each site is needed for any intended land use.

A capability subclass has not been assigned.

Uc—Udorthents-Udifluvents complex. This map unit consists of long narrow canyons with flowing streams on the canyon floor (fig. 9). The larger canyons are 100 to 250 feet deep and several miles long, and have an approximate east-west orientation. These canyons, or gorges, were formed by glacial and postglacial streamflow over the shaly soils and shale bedrock near the western edge of the Tughill Plateau. The canyon sides are steep and very steep or are escarpments. In some canyon sides bedrock, most commonly nearly vertical, is exposed. Udorthents are on the canyon sides. They formed in weathered shale from the underlying bedrock. The canyon floors are narrow flood plains along

streams that flow on some shale or limestone bedrock. Udifluvents are on the canyon floors. They formed in weathered shale colluvium from the canyon sides or in alluvium from streamflow, or both. They are subject to flooding during seasonal high water flow. Slope ranges from 0 to 80 percent.

This unit is about 70 percent Udorthents, about 20 percent Udifluvents, and about 10 percent other soils. The soils in this complex are intermingled so closely that they could not be mapped separately at the scale selected for mapping.

The properties of Udorthents and Udifluvents are variable and individual areas of these soils are difficult to

Figure 9.—Udorthents-Udifluvents complex is along many gorges in areas where the bedrock is shale.

examine adequately for proper placement of the series level. Consequently, a typical pedon cannot be given.

Typically, Udorthents have a high percentage of shale fragments intermingled with loamy material. The surface layer is low in organic matter content. In most places the soils are very strongly acid throughout.

Included with Udorthents in mapping, near the upper part of canyon walls, are small areas of moderately deep, well drained and excessively drained Manlius soils and very deep, well drained Bice soils. Also included are a few areas where minor slides have occurred and areas of rock outcrop. These included areas make up 5 percent of the map unit.

Typically, Udifluvents have a high percentage of shale fragments, as much as 25 percent of which are flagstones or stones. These soils are well drained and moderately well drained. The surface layer is medium or high in content of organic matter. Reaction varies with the origin of the materials.

Included with Udifluvents in mapping are soils that are more poorly drained and some soils that have a mucky surface layer. Most areas of these included soils have fewer coarse fragments and more silt and clay than Udifluvents. Also included are small gravel bars. These included areas make up 5 percent of the unit.

Most areas of the soils in this unit are woodland.

Slope and flooding are limitations of these soils for most uses.

Potential productivity for timber is fair in many places, but poor accessibility limits harvesting.

The capability subclass is VIIIs.

Ur—Urban land. This map unit consists mostly of nearly level to sloping areas with commercial or civil buildings, concrete or asphalt parking lots, and driveways. Areas of Urban land are mainly in commercial areas in downtown Watertown but also in other urban areas. Slope ranges from 0 to 15 percent. Most areas are about 90 percent Urban land and about 10 percent other soils.

Included with Urban land in mapping are small areas of Udorthents, smoothed, and small areas of other soils.

This unit is generally not suitable for other uses unless major renovation takes place.

A capability subclass has not been assigned.

VeB—Vergennes silty clay loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in areas of convex slopes on lake plains. Areas range from 10 to 70 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 8 inches thick. The subsoil is mottled and about 21 inches thick. It is dark brown clay in the upper part and dark grayish brown clay in the lower part. The substratum is mottled clay varved with silt, to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained Kingsbury soils, poorly drained Covington soils, and very poorly drained Livingston soils on the lower parts of the landscape. Also included are small areas of moderately deep, moderately well drained Wilpoint soils and somewhat poorly drained Chaumont soils. Also included are small areas of rock outcrop, marshes, wet spots, and sand spots.

The seasonal high water table in this Vergennes soil is commonly within 1 to 3 feet of the surface from December through May. The rate of water movement through the soil is slow in the surface layer and very slow in the subsoil and the substratum. The subsoil is firm and very plastic and sticky. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to neutral.

Most areas have been cleared and are used for cultivated crops. Some areas are in pasture. Some areas are woodland.

This soil is well suited to cultivated crops. The main limitations are the clayey texture and rate of water movement through the subsoil and the substratum. Very careful management is required if the soil is used for cultivated crops. It is important to till the soil when not too wet or too dry. Drainage is commonly needed if the soil is used for cultivated crops. Land smoothing and surface drains with suitable outlets are effective in draining the soil for crops. Erosion is a moderate hazard if the soil is bare of vegetation. Plowing in fall is common. Contour farming, using winter cover crops, crop rotation, returning crop residue and applying manure to the soil, and carefully working the soil help to control erosion, to maintain soil tilth and content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The clayey texture and rate of water movement through the subsoil and the substratum somewhat limit equipment use and cause high seedling mortality.

Rate of water movement through the subsoil and the substratum, the seasonal high water table, and the clayey texture are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table and low soil strength are limitations for other urban uses. Potential for habitat is fair for openland and woodland wildlife.

The capability subclass is IIe.

VeC—Vergennes silty clay loam, 8 to 15 percent slopes. This is a strongly sloping, very deep, moderately well drained soil mainly in areas of short, convex slopes on lake plains. Areas range from 5 to 20 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 8 inches thick. The subsoil is mottled and about 21 inches thick. It is dark brown clay in the upper part and dark grayish brown clay in the lower part. The substratum is mottled clay varved with silt, to a depth of 72 inches or more.

Included with this soil in mapping are small nearly level areas of somewhat poorly drained Kingsbury soils and poorly drained Covington soils. Also included are small areas of rock outcrop, marshes, wet spots, and sand spots.

The seasonal high water table is commonly within 1 to 3 feet of the surface from December through May. The rate of water movement through the soil is slow in the surface layer and very slow in the subsoil and the substratum. The subsoil is firm and very plastic and sticky. Runoff is medium. The capacity of the soil to store water available for plant growth is high. The surface layer is very strongly acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland.

This soil is moderately suited to cultivated crops. The main limitations are the clayey texture and rate of water movement through the subsoil and the substratum. Very careful management is required if the soil is used for cultivated crops. It is important to till the soil when not too wet or too dry. Erosion is a severe hazard if the soil is bare of vegetation. Plowing in fall is common. Contour strip cropping or field strips, crop rotation, using winter cover crops, returning crop residue and applying manure to the soil, and carefully working the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. Erosion is a moderate hazard because of slope. The clayey texture and rate of water movement through the subsoil and the substratum somewhat limit equipment use and cause high seedling mortality.

Rate of water movement through the subsoil and the substratum, the seasonal high water table, and the clayey texture and slope are limitations to use of this soil for sanitary facilities. The seasonal high water table, low soil strength, and slope are limitations for other urban uses. Potential for habitat is fair for openland and woodland wildlife.

The capability subclass is IIIe.

Wa—Wareham loamy fine sand. This is a nearly level, very deep, somewhat poorly drained and poorly drained soil mainly in low-lying areas on sandy plains. Areas range from 15 to 100 acres. Slope is less than 3 percent.

Typically, the surface layer is black loamy fine sand about 5 inches thick. The subsoil is mottled and about 19 inches thick. It is grayish brown loamy sand. The substratum is mottled, dark grayish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of better drained Deerfield soils on benches and very poorly drained Scarboro soils in depressions.

The seasonal high water table in this Wareham soil is commonly within 1 1/2 feet of the surface from September through June. The rate of water movement through the soil is rapid. Runoff is slow. The capacity of the soil to store water available for plant growth is low. The surface layer ranges from extremely acid to slightly acid.

This soil is used as woodland or permanent pasture or is reverting to brush. A few areas are in cultivated crops.

This soil is poorly suited for farming, unless drained. It is better suited to hay or sod crops.

If used for pasture, this soil requires a good management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers.

Potential productivity of this soil for red maple is moderate. The seasonal high water table limits equipment use, causes high seedling mortality, and somewhat restricts rooting depth, resulting in some uprooting of trees during windy periods.

The seasonal high water table, seepage, the sandy texture, and poor stability are limitations to use of this soil as sites for sanitary facilities and other urban development. Seepage and inadequate filtration of the effluent can result in ground water contamination. Potential for habitat is fair for wetland wildlife.

The capability subclass is IVw.

We—Wayland silt loam. This is a nearly level, very deep, poorly drained and very poorly drained soil mainly in smooth areas on low-lying flood plains along major streams or rivers. Areas range from 3 to 25 acres. Slope is less than 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 6 inches thick. The subsoil is mottled and about 24 inches thick. It is very dark grayish brown to very dark gray silt loam in the upper part and very dark grayish brown fine silt loam in the lower part. The substratum is mottled, dark gray silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained Hamlin soils and moderately well drained and somewhat poorly drained Teel soils on the higher parts of the flood plain. Also included are small areas of well drained Blasdell soils on terraces.

This soil is subject to frequent flooding for brief to long periods from November through June. During the same period the seasonal high water table is commonly within 1/2 foot of the surface. The rate of water movement through the soil is moderately slow or moderate in the surface layer and slow in the subsoil and the substratum. Runoff is slow, and in some areas the soil is ponded. The capacity of the soil to store water available for plant growth is high. The surface layer is strongly acid to mildly alkaline.

Most areas of this soil are in pasture. Some areas are used for cultivated crops. Some areas along streams are woodland or are reverting to brush.

This soil is poorly suited for cultivated crops. The main limitations are the prolonged seasonal high water table and flooding. The soil is difficult to drain because it is in low positions on flood plains.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and drainage.

Potential productivity of this soil for red maple is moderate. Flooding and the prolonged seasonal high water table limit equipment use, cause high seedling mortality, and restrict rooting depth, which results in uprooting of trees during windy periods.

Flooding, the prolonged seasonal high water table, and rate of water movement through the substratum are limitations to use of this soil as sites for sanitary facilities. Flooding, the prolonged seasonal high water table, and low soil strength are limitations for other urban uses. Potential for habitat is good for wetland wildlife.

The capability subclass is IVw.

Wh—Whately fine sandy loam. This is a nearly level, very deep, very poorly drained soil mainly in depressions on lowland plains. Areas range from 10 to 60 acres. Slope is less than 3 percent.

Typically, the surface layer is about 8 inches thick. It is black muck in the upper 2 inches and black fine sandy loam in the lower 6 inches. The subsoil is mottled and about 24 inches thick. It is olive gray sandy loam in the upper part and greenish gray silty clay loam in the lower part. The substratum is mottled, gray silty clay loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of poorly drained Shaker soils on benches and moderately well drained Elmridge soils on convex knolls.

The seasonal high water table in this Whately soil is commonly within 1 foot of the surface from October through August. The rate of water movement through the soil is moderately rapid or rapid in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and the clayey substratum. Runoff is very slow. The capacity of the soil to store water available for plant growth is high. The surface layer is moderately acid to slightly acid.

Most areas of this soil are woodland or are reverting to brush. Some areas are in permanent pasture or are idle.

This soil is poorly suited to cultivated crops because of the prolonged seasonal high water table. It is commonly difficult to drain because it is in low positions on the landscape.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, application of lime and fertilizers, and drainage.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

Ponding, rate of water movement through the lower part of the subsoil and the substratum, seepage, excess humus, and the clayey texture in the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. The prolonged seasonal high water table, ponding, potential frost action, and low soil strength are limitations for other urban uses. Potential for habitat is fair for wetland wildlife.

The capability subclass is Vw.

Wk—Willette muck. This is a nearly level, very deep, very poorly drained soil mainly in rounded or oblong, depressional areas or bogs. Areas range from 10 to 50 acres. Slope is less than 3 percent.

Typically, this soil is black muck about 15 inches thick over black to dark brown muck about 27 inches thick. The substratum is gray silty clay to a depth of 60 inches or more.

Included with this soil in mapping are small areas of deep, very poorly drained Carlisle soils in some bogs and depressional positions. Also included are small areas of Saprists and Aquents. Also included are small areas of deep, very poorly drained Livingston soils in depressions.

The seasonal high water table is within 1 foot of the surface from November through May. The rate of water movement through the soil is moderately slow to moderately rapid in the organic material and slow in the clayey material. The soil is ponded, or runoff is very slow. The capacity of the soil to store water available for plant growth is high. The surface layer is slightly acid to mildly alkaline.

This soil is mostly woodland or is reverting to brush.

This soil is not suited to cultivated crops and pasture because of the prolonged seasonal high water table. Draining the soil for agricultural use generally is not feasible.

Potential productivity of this soil for red maple is moderate. The prolonged seasonal high water table limits equipment use, causes high seedling mortality, and restricts rooting depth, resulting in uprooting of trees during windy periods.

Ponding, rate of water movement through the clayey material, excessive amounts of humus, and seepage are limitations to use of this soil as sites for sanitary facilities. Ponding, excessive amounts of humus, poor stability, and potential frost action are limitations for other urban uses. Potential for habitat is good for wetland wildlife.

The capability subclass is Vw.

WmB—Williamson silt loam, 3 to 8 percent slopes. This is a gently sloping, very deep, moderately well drained soil mainly in convex, elongated, irregularly shaped areas on plains. Areas range from 5 to 25 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil is about 32 inches thick. It is yellowish brown silt loam in the upper part and dark brown silt loam in the lower part. A layer of platy, brown silt loam separates the upper and lower parts. The substratum is mottled, brittle, firm, dark grayish brown, stratified silt loam and very fine sand to a depth of 60 inches or more.

Included with this soil in mapping, on the higher, sandy knolls and ridges, are small areas of well drained Arkport soils and moderately well drained Galen soils. Also included, where more clay is in the soils, are small areas of moderately well drained Collamer and Hudson soils. Also included are a few small areas of excessively drained, sandy Windsor soils.

The seasonal high water table in this Williamson soil is commonly within 1 1/2 to 2 feet of the surface from February through April. The rate of water movement through the soil is moderate in the upper part of the solum and slow in the firm, brittle part of the subsoil and the substratum. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is very strongly acid to moderately acid.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are used as pasture or woodland.

This soil is well suited to cultivated crops. If it is properly managed, row crops can be intensively grown. Erosion is a hazard if slopes are bare of vegetation. The seasonal high water table somewhat delays planting and harvesting crops. Random subsurface drains with suitable outlets are needed for crops. Conservation tillage and contour farming help to control erosion. Also, crop rotations, using winter cover crops, and returning crop residue and applying manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

Potential productivity of this soil for sugar maple is moderate. There are few or no major management concerns for woodland use.

The seasonal high water table and rate of water movement through the lower part of the subsoil and the substratum are limitations to use of this soil as sites for sanitary facilities. The seasonal high water table and potential frost action are limitations for other urban uses. Potential for habitat is good for openland and woodland wildlife.

The capability subclass is IIe.

WnB—Wilpoint silty clay loam, 3 to 8 percent slopes. This is a gently sloping, moderately deep, moderately well drained soil mainly on convex slopes. Bedrock is at a depth of 20 to 40 inches. Areas range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 6 inches thick. The subsoil is mottled and about 16 inches thick. It is dark brown silty clay in the upper part and dark brown to dark grayish brown clay in the lower part. The substratum is mottled, dark gray clay to a depth of 29 inches. Hard, limestone bedrock is at a depth of 29 inches.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Chaumont soils on concave slopes, poorly drained and very poorly drained Guffin soils in narrow, intermittent drainageways and in small depressions, and small areas of soils that are like this Wilpoint soil except they are siltier and have bedrock at a depth of 40 to 60 inches or more. Also included are small areas of rock outcrop, stony areas, wet spots, marshes, and small areas of soils that have steep slopes.

The seasonal high water table is commonly within a depth of 1 1/2 to 2 feet of the surface from December through May. Depth to bedrock is at a depth of 20 to 40 inches. The rate of water movement through the soil is slow or very slow. Runoff is medium. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas have been cleared and are used for cultivated crops. Some areas are in pasture. A few areas are woodland or in reforestation.

This soil is well suited to cultivated crops. The main limitations are the clayey texture and rate of water movement through the soil. Very careful management is needed if the soil is used for cultivated crops. It is important to till the soil when not too wet or too dry. Drainage is commonly needed if the soil is used for cultivated crops. Land smoothing and surface drains with suitable outlets are effective in draining this soil for crops. Erosion is a moderate hazard if the soil is bare of

vegetation. Plowing in fall is common. Contour farming, crop rotation, using winter cover crops, returning crop residues and applying manure to the soil, and carefully working the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The clayey texture and rate of water movement through the subsoil and the substratum somewhat limit equipment use and cause moderate seedling mortality.

Depth to bedrock, the seasonal high water table, the clayey texture, and rate of water movement through the soil are limitations to use of this soil as sites for sanitary facilities. The clayey texture, high shrinking and swelling, depth to bedrock, and low soil strength are limitations for other urban uses. Potential for habitat is fair for openland and woodland wildlife.

The capability subclass is IIe.

WnC—Wilpoint silty clay loam, 8 to 15 percent slopes. This is a sloping, moderately deep, moderately well drained soil mainly on convex, narrow ridges and knolls. Bedrock is at a depth of 20 to 40 inches. Areas range from 5 to 10 acres.

Typically, the surface layer is dark grayish brown silty clay loam about 6 inches thick. The subsoil is mottled and about 16 inches thick. It is dark brown silty clay in the upper part and dark brown to dark grayish brown clay in the lower part. The substratum is mottled, dark gray clay to a depth of 29 inches. Hard, limestone bedrock is at a depth of 29 inches.

Included with this soil in mapping are small areas of moderately deep, somewhat poorly drained Chaumont soils on concave slopes, poorly drained and very poorly drained Guffin soils in narrow, intermittent drainageways and small depressions, and small areas of soils that are similar to this Wilpoint soil except they are siltier and have bedrock at a depth of 40 to 72 inches or more. Also included are small areas of rock outcrop, stony areas, wet spots, marshes, and areas of soils that have steep slopes.

The seasonal high water table in this Wilpoint soil is commonly within a depth of 1 1/2 to 2 feet of the surface from December through May. Depth to bedrock is 20 to 40 inches. The rate of water movement through the soil is slow or very slow. Runoff is rapid. The capacity of the soil to store water available for plant growth is moderate. The surface layer is moderately acid to neutral.

Most areas of this soil have been cleared and are used for cultivated crops. Some areas are in pasture. A few areas are woodland or are in reforestation.

This soil is moderately suited to cultivated crops. The main limitations are the clayey texture and rate of water movement through the soil. Very careful management is needed if the soil is used for cultivated crops. It is important to till the soil when not too wet or too dry. Erosion is a severe hazard if this soil is bare of vegetation. Plowing in fall is common. Contour farming, crop rotation, using winter cover crops, returning crop residue and applying manure to the soil, and carefully working the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too wet or too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for sugar maple is moderate. The clayey texture and rate of water movement through the subsoil and the substratum somewhat limit equipment use and cause moderate seedling mortality.

Depth to bedrock, the seasonal high water table, the clayey texture, slope, and rate of water movement through the soil are limitations to use of this soil as sites for sanitary facilities. The clayey texture, high shrinking and swelling, depth to bedrock, low soil strength, and slope are limitations for other urban uses. Potential for habitat is fair for openland and woodland wildlife.

The capability subclass is IIIe.

WoB—Windsor loamy fine sand, 0 to 8 percent slopes. This is a nearly level to gently sloping, very deep, excessively drained soil mainly in broad or long, undulating areas on terraces and plains. Areas range from 15 to 100 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 5 inches thick. The subsoil is about 23 inches thick. It is strong brown to yellowish brown loamy fine sand in the upper part and brownish yellow loamy sand in the lower part. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Deerfield soils in depressions and low-lying areas. Also included are small areas of well drained Agawam soils. Also included are small sand pits and blowout areas.

The rate of water movement through this Windsor soil is rapid. Runoff is slow. The capability of the soil to store water available for plant growth is low. The surface layer is very strongly acid to moderately acid.

Most areas of this soil are in federal and state land ownership. Some areas are used as pasture or woodland. Some areas are idle. Only a few areas are used for cultivated crops. Some of the previously cleared areas have been planted to conifers. A few areas are used in commercial sand operations.

This soil is moderately suited to cultivated crops. It is somewhat droughty during the growing season. Wind erosion and water erosion are slight hazards if the more sloping areas are bare of vegetation. Conservation tillage, contour farming, crop rotation, using winter cover crops, and returning crop residue and adding manure to the soil help to control soil erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for northern red oak is moderate. Seedling mortality is high because of the sandy texture and droughty conditions of the soil.

Rate of water movement through the soil and the sandy texture are limitations to use of this soil as sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations. Droughtiness is a limitation for lawns and landscaping. There are few or no limitations for other urban uses. Potential for habitat is poor for openland and woodland wildlife.

The capability subclass is IIIs.

WoC—Windsor loamy fine sand, 8 to 15 percent slopes. This is a strongly sloping, very deep, excessively drained soil mainly in long or oblong areas on terraces and plains. Areas range from 15 to 40 acres.

Typically, the surface layer is very dark grayish brown loamy fine sand about 5 inches thick. The subsoil is about 23 inches thick. It is strong brown to yellowish brown loamy fine sand in the upper part and brownish yellow loamy sand in the lower part. The substratum is light yellowish brown sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Deerfield soils in depressions. Also included are small areas of well drained Agawam soils. Also included are small sand pits and blowout areas.

The rate of water movement through this Windsor soil is rapid. Runoff is slow or medium. The capability of the soil to store water available for plant growth is low. The surface layer is very strongly acid to moderately acid.

Most areas of this soil are in federal and state land ownership. Some areas are idle. Only a few areas are used for cultivated crops. Some previously cleared areas have been planted to conifers. A few areas are used in commercial sand operations.

This soil is poorly suited to cultivated crops. It is somewhat droughty during the growing season. Wind and water erosion is a moderate hazard if the more sloping areas are bare of vegetation. Conservation tillage, contour farming, crop rotation with long-term hay crops, using winter cover crops, and returning crop residue and adding manure to the soil help to control erosion, to maintain soil tilth and the content of organic matter, and to conserve moisture needed for plant growth.

If used for pasture, this soil requires a management program that minimizes overgrazing and restricts grazing when the soil is too dry. Suitable management practices are proper stocking rates, pasture renovation, pasture reseeding, and application of lime and fertilizers. These practices help to control erosion.

Potential productivity of this soil for northern red oak is moderate. Seedling mortality is high because of the sandy texture and droughty conditions.

Rate of water movement through the soil, the sandy texture, and slope are limitations to use of this soil as sites for sanitary facilities. Seepage and inadequate filtration of the effluent can result in ground water contamination. Poor stability is a limitation for shallow excavations. Slope and droughty conditions are limitations for lawns and landscaping. Slope is a limitation for other urban uses. Potential for habitat is poor for openland and woodland wildlife.

The capability subclass is IVs.

Prime Farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. Identification of prime farmland is a major step in meeting the Nation's needs for food and fiber.

The U.S. Department of Agriculture defines prime farmland as the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce a sustained high yield of crops while using acceptable farming methods. Prime farmland produces the highest yields and requires minimal amounts of energy and economic resources, and farming it results in the least damage to the environment.

An area identified as prime farmland must be used for producing food or fiber or must be available for those uses. Thus, urban and built-up land and water areas are not classified as prime farmland.

The general criteria for prime farmland are as follows: a generally adequate and dependable supply of moisture from precipitation or irrigation, favorable temperature and growing-season length, acceptable levels of acidity or alkalinity, few or no rocks, and permeability to air and water. Prime farmland is not excessively erodible, is not saturated with water for long periods, and is not flooded during the growing season. The slope range is mainly from 0 to 6 percent. For more detailed information on the criteria for prime farmland, consult the local staff of the Soil Conservation Service.

The survey area contains about 154,926 acres of prime farmland. That acreage makes up about 19 percent of the total acreage in the survey area. Areas are mostly scattered throughout the lake plain and associated till uplands. The main crops grown on prime farmland are corn, small grains, and hay. A few vegetable crops are also grown.

The soil map units that make up prime farmland in the survey area are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4, and the location of each unit is shown on the detailed soil maps at the back of this publication. The soil properties and characteristics that affect use and management of the units are described in the section "Detailed Soil Map Units."

Some soils in table 5 are classified as prime farmland if certain limitations of the soil are overcome. The measures needed to overcome the limitations of such soils are given in parentheses after the name of the map unit.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Anne Rabideau, extension agent, Cooperation Extension Service, and William E. Duckery, district conservationist, Soil Conservation Service, helped to prepare this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained and the capability subclass of each soil is shown; and the estimated yields of the main crops and hay plants are presented for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This section provides general information about the overall agricultural potential of the survey area and about the management practices that are needed. General principals of soil management related to crop production are discussed in the following paragraphs.

Erosion is a major concern on about 71,130 acres of the cropland in Jefferson County (*14*). This land is eroding at an average rate of 8 tons per acre per year. The hazard of erosion is related to the slope of the land, erodibility of the soil, rainfall, and the amount and type of plant cover.

Most soils that have slope of more than 3 percent require some measures to control water erosion. Soils that have a high content of silt and few stone fragments, such as Niagara, Collamer, and Hudson soils, are the most susceptible to erosion.

The loss of soil from erosion causes a loss of nutrients and water, gullies on hillsides, deterioration of tilth, detrimental sedimentation downslope, and pollution of streams and reservoirs. Soil productivity is generally reduced if the surface layer is lost and if increasing amounts of material from the subsoil are incorporated into the plow layer. This is especially true of soils that have a fine textured subsoil, such as Rhinebeck and Hudson soils, and soils that have a compact subsoil that restricts the rooting depth, such as Pinckney and Ira soils. Erosion also reduces the productivity of soils that tend to be droughty, such as Hinckley soils, because of a loss of organic matter. Soils that are shallow or moderately deep to bedrock, for example, Farmington, Hollis, and Galway soils, are permanently damaged by erosion because of the reduced rooting depth.

Erosion control practices provide protective cover, reduce runoff, and increase infiltration. Conservation tillage, using cover crops, leaving crop residue on the surface, and using cropping systems with a high proportion of sod-forming crops are suitable

management practices on soils on short, irregular slopes, such as rolling Alton soils. Contour farming, stripcropping, terracing, and using diversions are practices better suited to soils on smooth, long, uniform slopes, such as sloping Sodus, Ira, Madrid, and Darien soils.

Wind erosion is a hazard on cleared areas of organic Carlisle and Palms soils. It is of particular concern if the soil surface is dry. Using windbreaks, regulating the water table, and providing irrigation are effective in controlling wind erosion.

The effectiveness of a particular combination of erosion control practices differs from one soil to another, and different combinations can be equally effective on the same soil.

Drainage is needed on about one-half of the acreage used for crops and pasture in the survey area (*13*). Some soils are so wet that the production of crops common to the area is generally not possible without extensive drainage systems.

Wetness caused by the seasonal high water table interferes with early planting, growth, and harvesting of most crops on somewhat poorly drained soils. Soils in this drainage class are Scriba, Darien, Massena, Newstead, Minoa, Angola, Kingsbury, Rhinebeck, and Shaker soils. Crops grown on these soils respond well to drainage.

Some areas of well drained and moderately well drained soils, such as Sodus, Ira, Amenia, and Bombay soils, contain small areas of wetter soils that require random subsurface drainage to allow more uniform management of fields.

The design of drainage systems varies with the type of soil. A combination of surface drainage and subsurface drainage is needed in most areas of poorly drained and very poorly drained soils. Establishing drainage outlets in these soils is often difficult. Surface drainage can include open ditches, grassed waterways, land smoothing, bedding systems, and ridge tillage; subsurface drainage consists mainly of tile or plastic drains.

Drains must be more closely spaced in soils with slow to very slow permeability than they are in more permeable soils. Subsurface drainage is slow in such soils as Canandaigua, Livingston, Madalin, Covington, Rhinebeck, and Kingsbury soils. Land smoothing and surface drains with proper outlets are common on these soils in the survey area.

Soils with moderate to rapid permeability, such as Halsey and Scarboro soils, respond well to subsurface drainage if adequate outlets are available. Some wet, gently sloping soils respond well to interceptor drains that divert surface runoff and subsurface seepage away from the area. Examples of these kinds of soils are gently sloping Scriba, Massena, and Darien soils.

Surface stones and rock outcrops. Some soils in the county are very stony on the surface. Some soils have rock outcrops. These features severely limit the use of the soils for cropland and pasture. They severely limit or restrict the use of farm machinery. Soils with surface stones, such as Bice stony fine sandy loam, 0 to 15 percent slopes, and soils with rock outcrops, such as Chatfield-Rock outcrop complex, rolling, can be used only for hay and permanent pasture. On these soils, fertilizing, reseeding, and mowing are difficult.

Available water capacity. Some soils in the county tend to be droughty. Sandy and gravelly soils, soils with restricting layers, and soils that are shallow or moderately deep to bedrock tend to have a relatively low capacity to store moisture. Gravelly Alton soils, Scriba soils, which have a fragipan, and Hollis soils, which are shallow to bedrock, for example, have relatively low available water capacity. Maintaining or increasing organic matter content and improving tilth help to increase the water holding capacity of these droughty soils. The use of green manure crops, crop residue, and animal wastes helps to build up the organic matter content and to improve tilth.

Tilth affects the emergence of seedlings, infiltration of water into the soil, and ease of cultivation. Soils with good tilth generally have granular structure and are porous. Nellis and Madrid soils, for example, have good tilth.

Excessive tillage tends to reduce the organic matter content and breaks down tilth. Some soils that are deep, well drained or excessively drained, and coarse textured or moderately coarse textured, such as Alton and Groton soils, can be tilled with little concern for damaging tilth. However, wetter and finer textured soils, for example, Kingsbury, Rhinebeck, and Niagara soils, must be tilled at the proper moisture content to maintain tilth. Plowing or cultivating when these kinds of soils are wet causes puddling and results in surface crusts and clods when the soil dries. Practices that help to keep the soil granular, porous, and in good tilth are cultivation at proper moisture content, inclusion of sod crops, green manure crops, and cover crops in the crop rotation, return of crop residue to the soil, and additions of animal manure.

Fertility. Most of the soils in the county need lime and fertilizer for optimum crop production, and some soils only need one or the other. The amount needed depends on the natural content of lime and plant nutrients in the soil, on the needs of the particular crop, and on the desired level of yield.

Organic matter content is important in assessing soil fertility. The average organic matter content of the soils in the county is about 3.5 percent in the surface layer. Poorly drained and very poorly drained soils, such as Madalin and Wayland soils, generally have an organic matter content somewhat higher than average. Nitrogen in the organic matter is in complex organic forms and is not usable by plants until the organic matter is slowly decomposed by soil micro-organisms. Nitrogen fertilizer is needed to supplement the nitrogen made available

from the soil organic matter. The use of green manure crops and sod crops and the return of crop residue to the soil help to increase the organic matter content and to improve the natural nitrogen content.

Nitrogen can be lost either through leaching from rapidly permeable soils, such as Groton soils, or by denitrification on the wetter and less permeable soils, such as Massena soils. Small amounts of nitrogen applied at planting time and as a sidedressing while the crop is growing help to maintain the proper content.

Coarse textured soils, such as Windsor soils, tend to be very low in natural phosphorus. Additions of appropriate amounts of phosphate in the form of commercial fertilizers help to increase the content of phosphorus.

The soils range from high to low in potassium-supplying capacity. Rhinebeck and Vergennes soils have a clayey subsoil and are high in potassium content, but still require additional potassium fertilizer.

Special crops. The production of crops, other than hay, corn, small grains, wheat, and pasture, in Jefferson County is minor. Approximately 160 acres is used in the commercial production of strawberries and vegetables, such as peas, beans, squash, sweet corn, tomatoes, and peppers. Although only a small acreage is used for such crops, potential exists for increased production and acreage of these commodities in the county.

The latest information on erosion control practices, drainage, tilth, fertilizer, and available water capacity of the soils and on growing special crops and field crops can be obtained from the local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide detailed information about the management and productivity of the soils.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. The levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Forest Resources and Soils

R.E. Smith, Jr., forester, Soil Conservation Service, and Scott K. Gray III and James Fields, foresters, New York State Department of Environmental Conservation, helped to prepare this section.

Nearly 360,000 acres, or 45 percent of Jefferson County, is commercial forest land, according to the Forest Service. Commercial forests are capable of producing crops of industrial wood and are not reserved from this use. Only about 21,000 acres of the county is reserved forest land. The acreage of this forest land has increased 24 percent since 1968.

Although about one-half of the commercial forest land consists of seedling and sapling-sized tree stands, the growing stock totals more than 248 million cubic feet. This total equals a volume of nearly 3 million cords of wood. More than 97,000 acres support sawtimber-sized stands. About 37,000 acres are classified as nonstocked.

Most of the commercial forests are the northern hardwood type. Some of these forests are the oak and softwood types. These major forest types cover 359,600 acres. Of this total, northern hardwoods cover 200,100 acres, oak covers 96,400 acres, and softwood covers 63,100 acres.

Maples make up 36 percent of the commercial forest growing stock in the county, and other hardwoods make up 32 percent. White pine and hemlock make up 12 percent of the growing stock, other softwoods make up 16 percent, and oak makes up 4 percent.

Much of the forest land in the county is in groups of woodlots, often involving two or more owners, and adjacent to agricultural land. The exceptions, in the larger concentrations of forest land, include federally owned land on Fort Drum in the towns of Antwerp and Wilna. Publicly owned state and county lands predominate in the densely wooded parts of the towns of Rodman, Lorraine, and Worth. The soils information in this survey facilitates the location of the most productive sites and provides an important tool for improved management of the existing forests in the county. It also contains the necessary data to select the best species for reforestation, by matching the trees' requirements with soil characteristics and the landowner's objectives.

Sugar maple, the dominant tree in the hardwood forests, grows mostly on better drained soils. On these soils in upland till areas, the common trees are white ash, black cherry, basswood, and beech. The stands on Bice soils commonly comprise red maple, red spruce, and hemlock. Lowville and Pinckney soils support yellow birch, hemlock, and other hardwoods. Hickories grow on Danley and Darien soils. On the wetter, upland, till soils, red maple is a common tree, but northern white-cedar and balsam fir also grow on these soils.

On the moderately deep to shallow, upland, till soils, the common trees are sugar maple, northern red oak, white ash, beech, black cherry, basswood, eastern white pine, and hophornbeam. Where drainage is poor the stands consists of aspen, gray birch, balsam fir, black ash, white ash, and northern white-cedar. The very shallow soils, such as Galoo and Quetico soils, support sparse stands of red maple, hophornbeam, red oak, eastern white pine, and aspen.

The better drained, lacustrine soils support stands of hardwoods. Eastern redcedar, northern white-cedar, and eastern white pine, as well as silver maple, green ash, black ash, and elm, grow where drainage is poorer. Somewhat poorly drained, lacustrine soils, such as Chaumont and Kingsbury soils, support bitternut hickory.

White pine makes up only 7 percent of the total forest growing stock; however, it is common on the better drained, coarse textured soils, such as Hinckley soils. These soils also support stands of sugar maple, red oak, paper birch, and beech.

The organic soils support mixed stands of black spruce, tamarack, and other water-tolerant trees.

Potential site productivity of the commercial forest land in the St. Lawrence-Northern Adirondack geographic unit has been assessed by the Forest Service. This site productivity is based upon the inherent capacity of the land to grow crops of industrial wood. Productivity class is expressed in terms of mean annual growth of growing stock trees in fully stocked, natural stands. The assessment indicates that 6 percent of the forest land has the capacity to produce between 165 and 120 cubic feet per acre per year. An additional 29 percent can produce 119 to 85 cubic feet per acre per year, and 43 percent can produce 84 to 50 cubic feet per acre per year. The rest can produce 49 to 20 cubic feet per acre per year.

These data show that more than 40 percent of the forest land in the region where Jefferson County is

located is capable of producing 84 to 50 cubic feet of wood per acre annually. Most northern hardwood and upland oak tree species in this area are not expected to produce more than 60 cubic feet of wood annually regardless of soil-site conditions. Conifers, especially eastern white pine, and possibly Norway spruce, may be expected to produce as much as 150 to 140 cubic feet of wood per acre per year.

Woodland Management and Productivity

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed in the tables. The table gives the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, that the indicator species can produce. The larger the number, the greater the potential productivity. The number 1 indicates low productivity; 2 and 3, moderate; 4 and 5, moderately high; 6 through 8, high; and 9 through 11, very high. The second part of the symbol, a letter, indicates the major kind of soil limitation for use and management. The letter *R* indicates steep slopes; *W*, excessive water in or on the soil; *D*, restricted rooting depth caused by bedrock, hardpan, or other restrictive layer; *C*, clay in the upper part of the soil; and *S*, sandy texture. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, W, D, C, and S.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that erosion can occur as a result of site preparation or following cutting operations and where the soil is exposed, for example, roads, skid trails, fire lanes, and log handling areas. Forests that are abused by fire or overgrazing are also subject to erosion. The ratings for the erosion hazard are based on the percent of the slope and on the erosion factor K shown in table 16. A rating of *slight* indicates that no particular measures to prevent erosion are needed under ordinary conditions. A rating of *moderate* indicates that erosion control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

The proper construction and maintenance of roads, trails, landings, and fire lanes will help overcome the erosion hazard.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that equipment use normally is not restricted either in kind of equipment that can be used or time of year because of soil factors. If soil wetness is a factor, equipment use can be restricted for a period not to exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If soil wetness is a factor, equipment use is restricted for 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either in kind of equipment or season of use. If soil wetness is a factor, equipment use is restricted for more than 3 months.

Choosing the most suitable equipment and timing harvesting and other management operations to avoid seasonal limitations help overcome the equipment limitation.

Seedling mortality refers to the probability of death of naturally occurring or planted tree seedlings as influenced by kinds of soil or topographic conditions. The factors considered in rating the soils for seedling mortality are texture of the surface layer, depth and duration of the water table, rock fragments in the surface layer, rooting depth, and aspect of the slope. A rating of *slight* indicates that under usual conditions the expected mortality is less than 25 percent. A rating of *moderate* indicates that the expected mortality is 25 to 50 percent. Extra precautions are advisable. A rating of *severe* indicates that the expected mortality is more than 50 percent. Extra precautions are important. Replanting may be necessary.

The use of special planting stock and special site preparation, such as bedding, furrowing, or surface drainage, can help reduce seedling mortality.

Windthrow hazard is the likelihood of trees being uprooted (tipped over) by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions are a seasonal high water table and bedrock or a fragipan or other limiting layer. A rating of *slight* indicates that normally no trees are blown down by the wind. Strong winds may break trees but do not uproot them. A rating of *moderate* indicates that moderate or strong winds occasionally blow down a few trees during periods of soil wetness. A rating of *severe* indicates that moderate or strong winds may blow down many trees during periods of soil wetness.

The use of specialized equipment that does not damage surficial root systems during partial cutting operations can help reduce windthrow. Care in thinning or no thinning also can help reduce windthrow.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified

number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Common trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, represents an expected volume produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced on a fully stocked, even-aged, unmanaged stand. One cubic meter per hectare equals 14.3 cubic feet per acre.

The first tree species listed under common trees for a soil is the indicator species for that soil. The indicator species is the species that is common in the area and is generally the most productive on the soil. The productivity class of the indicator species is the number used for the ordination symbol.

Trees to plant are those that are suited to the soil and are planted for commercial wood production. This column does not imply that the species listed are recommended for any given objectives or conditions, except that these species are considered the best suited for planting on that soil. Landowners and managers can minimize planting failures by matching tree species with suitable soils.

Recreation

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Robert E. Myers, wildlife biologist, Soil Conservation Service, helped to prepare this section.

In Jefferson County, waterfowl is one of the most important wildlife resources. Lake Ontario, the St. Lawrence River, and the many wetlands attract and provide habitat for migrating ducks and geese and a variety of marsh and shore birds. Many remain throughout summer to nest in adjacent uplands.

The open, agricultural land with small woodlots in the north and west parts of the county provides unique habitat for Hungarian partridge. These are some of the few areas in the state that these birds inhabit. In this

area, the population of white-tailed deer is good, ruffed grouse are sparse and localized, and the population of cottontails is moderate.

The eastern part of the county, at the edge of the Tughill Plateau, is heavily forested and has scattered dairy farms. Deer, grouse, and snowshoe hare populations are good in this area.

In the northern part of the county, along the St. Lawrence County boundary, a population of wild turkeys has been established and is increasing.

Songbirds are common throughout the county, and these species vary with the type of habitat.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, timothy, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, and asters.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, aspen, cherry, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, potholes, ditches, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include Hungarian partridge, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include snowshoe hare, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site

features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on

the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a

cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture (*12*). These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5

percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the

soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

Some soils in table 17 are assigned to two hydrologic soil groups. Dual grouping is used for one of two reasons: (1) Some soils have a seasonal high water table but can be drained. In this instance the first letter applies to the drained condition of the soil and the second letter to the undrained condition. (2) In some soils that are less than 20 inches deep to bedrock, the first letter applies to areas where the bedrock is cracked and pervious and the second letter to areas where the bedrock is impervious or where exposed bedrock makes up more than 25 percent of the surface of the soil.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable period of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional, common,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). *Common* is used when classification as occasional or frequent does not affect interpretations. Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely, thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely, grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table, that is, *perched, artesian,* or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an

unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

The two numbers in the "High water table—Depth" column indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*15*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Inceptisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquept (*Aqu*, meaning water, plus *ept*, from Inceptisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquepts (*Hapl*, meaning minimal horizonation, plus *aquept*, the suborder of the Inceptisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Lithic* identifies the subgroup that is underlain with bedrock at a shallow depth. An example is Lithic Haplaquepts.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy, mixed, nonacid, frigid Lithic Haplaquepts.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. Ruse is an example of a series name.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual* (*12*). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (*15*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Agawam Series

The Agawam series consists of very deep, well drained soils that formed in stream-deposited sand or sand and gravel on high terraces, deltas, and outwash plains. Slope ranges from 0 to 8 percent.

Agawam soils are commonly near excessively drained Windsor soils and moderately well drained Deerfield soils. Agawam soils are more loamy than Windsor and Deerfield soils.

Typical pedon of Agawam fine sandy loam, 3 to 8 percent slopes, in the town of Le Ray, between the city of Watertown and the village of Black River, 0.4 mile north of the intersection of New York State Route 3 and Duffy Road, 660 feet east of Duffy Road:

Ap—0 to 10 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; friable; many roots; moderately acid; abrupt smooth boundary.

Bw1—10 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; friable; many roots; moderately acid; clear smooth boundary.

Bw2—16 to 30 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; friable; few roots; moderately acid; abrupt wavy boundary.

2C—30 to 60 inches; brown (10YR 5/3) loamy fine sand; single grain; loose; few roots; moderately acid.

The solum ranges from 15 to 35 inches in thickness. Coarse fragments range from 0 to 10 percent, by volume, in the solum and from 0 to 15 percent in the substratum. Unlimed soils range from very strongly acid to slightly acid.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. Its texture is fine sandy loam or loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8. Its texture is fine sandy loam to loam.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4. Its texture is fine sand, loamy fine sand, or loamy sand.

Allis Series

The Allis series consists of moderately deep, poorly drained and somewhat poorly drained soils that formed in glacial till on uplands. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 0 to 8 percent.

Allis soils are commonly near moderately deep, somewhat poorly drained Angola soils, shallow, somewhat excessively drained Nassau soils, and moderately deep, well drained and excessively drained Manlius soils on uplands. Allis soils are more clayey than Angola soils and have fewer coarse fragments than Nassau and Manlius soils.

Typical pedon of Allis silt loam, 0 to 3 percent slopes, in the town of Rodman, 1.6 miles southwest of the village of Rodman on New York Route 97, 50 feet northeast of highway:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium and fine granular structure; friable; many roots; 3 percent shale fragments; very strongly acid; abrupt smooth boundary.

Bg1—8 to 12 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak and moderate medium subangular blocky structure; firm; common roots; 3 percent shale fragments; very strongly acid; clear wavy boundary.

Bg2—12 to 16 inches; gray (5Y 5/1) shaly silty clay; many (50 percent) medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few roots; 15 percent shale fragments; very strongly acid; clear wavy boundary.

Bg3—16 to 28 inches; dark gray (N 4/0) shaly silty clay; many (50 percent) medium and coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; sticky and plastic; few roots; 30 percent shale fragments; very strongly acid; abrupt smooth boundary.

R—28 inches; soft, dark colored, shale bedrock; fractured; rippable; very strongly acid.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Coarse fragments range from 3 to 15 percent, by volume, in the surface layer and from 3 to 35 percent in the subsoil. Reaction is extremely acid to moderately acid.

The A1, or Ap, horizon has hue of 10YR or 2.5Y and value and chroma of 2 to 4. It is silt loam or silty clay loam.

The B horizon is neutral or has hue of 10YR or 5Y, value of 4 to 6, and chroma of 0 to 6. It has common to many distinct or prominent mottles. Its texture is clay, silty clay, silty clay loam, or their shaly analog.

Some pedons have a C horizon that has colors and textures similar to those of the B horizon.

Bedrock is dominantly shale and, in some places, interbedded with siltstone and sandstone.

Alton Series

The Alton series consists of very deep, well drained and somewhat excessively drained soils that formed in glacial outwash and remnant beach deposits. Slope ranges from 0 to 45 percent.

Alton soils are commonly near excessively drained Windsor soils and moderately well drained Deerfield and Phelps soils. Alton soils are more loamy than Windsor and Deerfield soils. Alton soils are more gravelly in the subsoil.

Typical pedon of Alton gravelly loam, 3 to 8 percent slopes, in the town of Ellisburg, 900 feet east of the intersection of County Route 122 and Hager Road, 396 feet north of road:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak fine and medium granular structure; friable; common fine roots; 20 percent

coarse fragments; 3 percent is larger than 3 inches; neutral; abrupt smooth boundary.

Bw1—6 to 25 inches; strong brown (7.5YR 5/6) very gravelly coarse sandy loam; weak medium and fine subangular blocky structure; friable; common fine roots; common fine tubular pores; 35 percent coarse fragments; 7 percent is larger than 3 inches; slightly acid; clear wavy boundary.

Bw2—25 to 33 inches; yellowish brown (10YR 5/4) very gravelly coarse sandy loam; weak fine and medium subangular blocky structure; very friable; common fine and very fine roots; common fine and very fine tubular pores; 60 percent coarse fragments; 10 percent is larger than 3 inches; slightly acid; clear wavy boundary.

C—33 to 65 inches; brown (10YR 4/3) very gravelly coarse sandy loam; massive; very friable; lenses of pale brown (10YR 6/3) sand and fine gravel; few fine roots; 50 percent coarse fragments; 20 percent is larger than 3 inches; cemented with lime within 80 inches; slightly acid.

The solum ranges from 30 to 48 inches in thickness. Carbonates are at a depth of 48 to 80 inches. Coarse fragments range from 15 to 30 percent, by volume, in the surface layer, from 25 to 60 percent in the subsoil, and from 35 to 65 percent in the substratum. Reaction ranges from strongly acid to neutral in the solum and from slightly acid to mildly alkaline in the substratum.

The Ap, or A1, horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. Its texture is loam, sandy loam, or its gravelly analog.

The B horizon has hue of 7.5YR or 10YR and value and chroma of 3 to 6. Its texture is gravelly loam to very gravelly coarse sandy loam. Its structure is granular or subangular blocky.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. Its texture is very gravelly coarse sandy loam, very gravelly loamy sand, and very gravelly sand.

Amenia Series

The Amenia series consists of very deep, moderately well drained soils that formed in calcareous glacial till deposits on uplands and in a few lowland areas. Slope ranges from 0 to 8 percent.

Amenia soils are commonly near Nellis, Lowville, Galway, Massena, and Sun soils. Amenia soils are not as well drained as Nellis and Lowville soils. They are deeper than Galway soils and are better drained than Massena and Sun soils.

Typical pedon of Amenia loam, 0 to 3 percent slopes, in the town of Adams, northeast of the village of Adams, 1.4 miles from the Adams Post Office and 1,056 feet east of Wright Street Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable; many fine roots; 3 percent coarse fragments; slightly acid; abrupt smooth boundary.

Bw—9 to 19 inches; dark yellowish brown (10YR 4/4) loam; weak coarse subangular blocky structure; friable; common fine and very fine roots; common fine vertical tubular pores; common macro pores or vertical channels filled with very dark grayish brown (10YR 3/2) silt loam; 5 percent coarse fragments; neutral; clear smooth boundary.

2C1—19 to 26 inches; brown (10YR 5/3) gravelly fine sandy loam; few fine faint yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) mottles; moderate medium platy structure; firm; very few fine roots; 20 percent coarse fragments; slightly effervescent; mildly alkaline; clear wavy boundary.

2C2—26 to 60 inches; grayish brown (10YR 5/2) gravelly fine sandy loam; common fine and medium distinct reddish brown (2.5YR 5/4) and few fine and medium faint yellowish brown (10YR 5/6) mottles; massive; firm; 30 percent coarse fragments; strongly effervescent; moderately alkaline.

The thickness of the solum and depth to carbonates range from 18 to 30 inches. Coarse fragments range from 3 to 15 percent in the surface layer and from 5 to 35 percent in the subsoil and the substratum. Reaction ranges from moderately acid to mildly alkaline in the solum and is mildly alkaline and moderately alkaline in the substratum.

The Ap, or A1, horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or loam.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Its texture is silt loam, loam, fine sandy loam, or their gravelly analog. Its structure is weak or moderate, fine or medium subangular blocky. Its consistence is very friable to firm.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Its texture is gravelly fine sandy loam, or loam or its gravelly analog. Its structure is platy, or the horizon is massive. Its consistence is friable or firm.

Angola Series

The Angola series consists of moderately deep, somewhat poorly drained soils that formed in medium and moderately fine textured glacial till derived mainly from shale bedrock and uplands. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 0 to 8 percent.

Angola soils are commonly near moderately deep, poorly drained and somewhat poorly drained Allis soils, well drained to excessively drained Manlius soils, and shallow, somewhat excessively drained Nassau soils on uplands. Angola soils are not as clayey as Allis soils and are more poorly drained than Manlius and Nassau soils.

Angola soils are also near very deep, well drained and moderately well drained Pinckney soils. Unlike Angola soils, Pinckney soils have a fragipan.

Typical pedon of Angola silt loam, 0 to 3 percent slopes, in the town of Champion, 2,000 feet southwest of the point where the Lewis County line intersects with New York Route 12, and 0.38 mile southwest of New York Route 12 and Sandy Creek:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) rubbed; moderate medium granular structure; friable; many fine roots; 3 percent coarse fragments; neutral; abrupt smooth boundary.

Btg—8 to 20 inches; dark gray (10YR 4/1) silty clay loam, dark grayish brown (10YR 4/2) rubbed; many (40 percent) fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm, sticky; few fine pores with clay linings; thin clay films on ped faces; common fine roots; 10 percent coarse fragments; neutral; clear wavy boundary.

C—20 to 24 inches; dark gray (10YR 4/1) shaly silty clay loam, dark grayish brown (10YR 4/2) rubbed; common fine distinct dark yellowish brown (10YR 4/4) horizontal streaks as mottles; moderate medium platy structure; firm, slightly sticky; few fine roots; 20 percent coarse fragments; neutral; clear wavy boundary.

R—24 inches; black (10YR 2/1) shale bedrock, fractured in upper few inches; neutral.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Coarse fragments, mainly dark shale, range from 0 to 15 percent, by volume, in the surface layer and from 5 to 35 percent in the subsoil. Below the subsoil the volume of coarse fragments can increase to as much as 50 percent or more. Reaction ranges from moderately acid to neutral in the solum and is neutral or mildly alkaline in the substratum.

The Ap, or A1, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. Its texture is silt loam or silty clay loam.

The B horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. The dark color of chroma of 1 or less is thought to be inherited from underlying shale bedrock materials. The horizon is 40 percent or more, by volume, distinct, high chroma mottles. Its texture is silt loam or silty clay loam that is 18 to 35 percent clay and that has clay films and linings. Its structure is medium or coarse subangular or angular blocky. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2, and is dark gray (10YR 4/1) to dark grayish brown (2.5Y 4/2). Its texture is shaly silt loam or shaly silty clay loam.

Aquents

Aquents consist of very deep, very poorly drained, mineral soils that have a dark surface layer that is rich in organic matter. These soils are ponded with shallow water throughout much of the year. They are commonly called freshwater marsh. They are in low-lying areas or depressions adjacent to Lake Ontario, the St. Lawrence River, the Indian River, and other natural or manmade lakes, ponds, and bodies of open water. Slope is 0 or 1 percent.

Aquents in Jefferson County are commonly in an intricate pattern with Saprists that are formed in thick deposits of organic material. They are commonly near Canandaigua, Halsey, Granby, and Lamson soils in slightly higher areas, where, in some years, ponding occurs for brief periods in early spring.

The properties of Aquents differ from place to place. Consequently, these soils are named at a level above the series level and a typical pedon is not given.

Aquents have a solum that is 5 to more than 31 inches thick. Depth to bedrock is generally more than 60 inches. Coarse fragments range from 0 to 10 percent, by volume.

The surface layer, about 7 inches thick, has hue of 7.5YR to 5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is silty clay loam to gravelly loamy sand. Its reaction is moderately acid to neutral.

The substratum, about 24 inches thick, has hue of 10YR to 5Y, value of 3 to 5, and chroma of 0 to 2. Mottles are common. Texture is silty clay loam to sand. Coarse fragments range from 10 to 20 percent. Reaction ranges from neutral to moderately alkaline.

Arkport Series

The Arkport series consists of gently sloping or sloping, very deep, well drained soils that formed in deltaic deposits that have a high sand content. Slope ranges from 3 to 15 percent.

Arkport soils are commonly near moderately well drained Galen, somewhat poorly drained Minoa soils, and excessively drained Groton soils on outwash beaches. Arkport soils are not as sandy and gravelly as Groton soils.

Typical pedon of Arkport fine sandy loam, 8 to 15 percent slopes, in the town of Ellisburg, 1,056 feet south of the intersection of County Route 79 and Lyng Road, 75 feet east of Lyng Road:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; friable; many fine and few medium roots; neutral; abrupt smooth boundary.

Bw1—7 to 10 inches; brown (10YR 5/3) very fine sandy loam; weak medium and fine subangular blocky structure; very friable; common fine roots; few fine

and medium pores; neutral; abrupt smooth boundary.

Bw2—10 to 13 inches; yellowish brown (10YR 5/6) very fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few fine and medium pores; neutral; abrupt smooth boundary.

Bw3—13 to 23 inches; light yellowish brown (10YR 6/4) very fine sandy loam; massive; friable; few fine roots; few fine tubular pores; slightly acid; clear wavy boundary.

E/Bt—23 to 56 inches; pale brown (10YR 6/3) loamy fine sand E material; massive; friable; dark brown (7.5YR 4/4) very fine sandy loam Bt material as lamellae, 1/4 to 1 1/2 inches thick, that total more than 8 inches in thickness; massive; friable; clay bridging on sand grains; few fine roots in upper part; moderately alkaline; abrupt wavy boundary.

C—56 to 80 inches; light brownish gray (10YR 6/2) fine sand; massive; friable; strong effervescence; moderately alkaline.

The solum ranges from 40 to 90 inches in thickness. Depth to carbonates ranges from 36 to 120 inches. Depth to the uppermost lamella ranges from 15 to 30 inches. Reaction ranges from very strongly acid to neutral in the A horizon and the upper part of the B horizon and slightly acid to moderately alkaline in the lower part of the B horizon and the C horizon.

The A1, or Ap, horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 or 3. Its texture is fine sandy loam or very fine sandy loam.

The B horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6. Its texture is very fine sandy loam to loamy fine sand. Its structure is weak fine or medium granular or subangular blocky, or the horizon is massive or single grain. Its consistence ranges from friable to loose.

The E part of the E/Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 2 to 4. Its texture is loamy very fine sand or loamy fine sand. Its structure is very weak granular, or this part is massive. Its consistence is very friable or loose. The Bt part has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4. Its texture is very fine sandy loam to loamy fine sand. Its structure is weak blocky or platy, or this part is massive. Its consistence is friable or firm.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 2 to 4. Its texture is fine sand to loamy very fine sand. Its consistence is loose to friable.

Benson Series

The Benson series consists of shallow, somewhat excessively drained and excessively drained soils that formed in glacial till or in wind- and water-deposited material mixed with till or congeliturbate. These soils are on uplands where bedrock is at a depth of less than 20 inches. Some areas have limestone sinks or solution cracks. Slope ranges from 0 to 50 percent.

Benson soils are commonly near moderately deep, well drained and moderately well drained Galway soils, shallow, well drained and excessively drained Farmington soils, and very shallow, excessively drained and somewhat excessively drained Galoo soils. Benson soils have a higher percentage of coarse fragments in the subsoil than Farmington and Galoo soils.

Typical pedon of Benson channery silt loam, in an area of Benson-Galoo complex, very rocky, 0 to 8 percent slopes, in the town of Adams, about 3,400 feet north of the junction of County Route 76 and Lyons Corners Road, 660 feet east of Lyons Corners Road:

Ap—0 to 3 inches; dark brown (7.5YR 3/2) channery silt loam; weak fine granular structure; very friable; many fine roots; 30 percent coarse fragments; neutral; clear smooth boundary.

BA—3 to 6 inches; reddish brown (5YR 4/3) very channery silt loam; weak fine granular structure; friable; many fine roots; 40 percent coarse fragments; neutral; abrupt smooth boundary.

Bw—6 to 12 inches; dark reddish brown (5YR 3/3 and 3/4) very channery silt loam; weak fine subangular blocky structure; friable; common fine roots; 70 percent coarse fragments; weak effervescence; mildly alkaline; abrupt smooth boundary.

R—12 inches; gray limestone bedrock.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Depth to carbonates ranges from 6 to 20 inches. Coarse fragments range from 15 to 35 percent, by volume, in the A horizon and from 30 to 70 percent in the B horizon, and, in some pedons, the C horizon. Clay content ranges from 10 to 27 percent. Reaction ranges from moderately acid to neutral in the A horizon and from slightly acid to mildly alkaline in the B horizon and, in some pedons, the C horizon.

The Ap, or A1, horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is loam or silt loam in the fine earth fraction.

The B horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. Its texture is loam or silt loam in the fine earth fraction. Its structure is weak subangular blocky or weak granular. Its consistence is friable or very friable.

Bedrock is limestone except for thin layers of shale in some pedons.

Bice Series

The Bice series consists of very deep, well drained soils that formed in glacial till derived from various proportions of sandstone and shale, but mainly from gneiss and granite. A thin silty mantle overlies the till on upland plains. Slope ranges from 0 to 50 percent.

Bice soils are commonly near well drained and moderately well drained Pinckney soils and poorly drained and very poorly drained Ensley soils on upland till plains. Unlike Bice soils, Pinckney soils have a fragipan. Bice soils have a subsoil that is more acid than that of Ensley soils.

Typical pedon of Bice fine sandy loam, in an area of Bice very stony fine sandy loam, 0 to 15 percent slopes, in the town of Wilna, 350 feet southeast of the intersection of Rogers Crossing Road and Croghan Road, 60 feet northeast of Croghan Road:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine and very fine granular structure; very friable; many fine and few medium roots; 10 percent coarse fragments; very strongly acid; clear smooth boundary.

Bw—6 to 18 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam; weak fine and very fine granular structure; very friable; common fine and few medium roots; 15 percent coarse fragments; strongly acid; clear wavy boundary.

BC—18 to 26 inches; brown (10YR 5/3) gravelly sandy loam; massive; friable; few medium roots; 25 percent coarse fragments; strongly acid; clear wavy boundary.

C1—26 to 40 inches; dark grayish brown (10YR 4/2) gravelly sandy loam; massive; friable; few medium roots; 25 percent coarse fragments; strongly acid; clear wavy boundary.

C2—40 to 70 inches; grayish brown (10YR 5/2) gravelly sandy loam; thin lenses of coarse sand and silt; massive; firm; 25 percent coarse fragments; strongly acid.

The solum ranges from 20 to 36 inches in thickness. Depth to bedrock is commonly more than 80 inches. Coarse fragments range from 5 to 15 percent, by volume, in the surface layer and from 5 to 25 percent in the subsoil and the substratum. Reaction ranges from very strongly acid to moderately acid throughout.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Its texture in the fine earth fraction is fine sandy loam to silt loam.

The B horizon in the upper part has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The B horizon in the lower part has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The horizon is sandy loam to silt loam in the upper part and sandy loam to loam in the lower part, or it is the gravelly analog of these textures. Its structure is weak granular or subangular blocky, or the horizon is massive.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. Its texture is sandy loam, fine sandy loam, or loam. The horizon is massive, or its structure is platy.

Blasdell Series

The Blasdell series consists of very deep, well drained soils that formed in water-sorted shaly material on outwash terraces and alluvial fans. Slope ranges from 0 to 15 percent.

Blasdell soils are commonly near moderately well drained Phelps soils and very poorly drained Halsey soils. Unlike Blasdell soils, Phelps and Halsey soils have mottling in the subsoil.

Typical pedon of Blasdell shaly silt loam, 0 to 3 percent slopes, in the town of Adams, 1,700 feet southwest of the intersection of County Routes 155 and 69, 120 feet north of County Route 69:

Ap—0 to 8 inches; dark brown (10YR 3/3) shaly silt loam; weak medium granular structure; friable; common fine roots; 15 percent coarse fragments; moderately acid; clear wavy boundary.

Bw1—8 to 18 inches; brown (10YR 5/3) very shaly silt loam; moderate medium subangular blocky structure; friable; common fine roots; 40 percent coarse fragments; moderately acid; clear wavy boundary.

Bw2—18 to 36 inches; brown (10YR 4/3) very shaly loam; moderate medium subangular blocky structure; friable; common fine roots; 45 percent coarse fragments; moderately acid; gradual wavy boundary.

C—36 to 60 inches; dark brown (10YR 3/3) very shaly loam; massive; friable; 50 percent coarse fragments; moderately acid.

The solum ranges from 30 to 50 inches in thickness. Coarse fragments range from 15 to 35 percent in the surface layer, from 35 to 60 percent in the subsoil, and from 45 to 75 percent in the substratum. Depth to carbonates is more than 80 inches. Reaction ranges from very strongly acid to moderately acid in the solum and from strongly acid to slightly acid in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. Its texture is silt loam or loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. Its texture is silt loam to loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is loam or silt loam in the fine earth fraction. Its consistence is friable or firm.

Bombay Series

The Bombay series consists of very deep, moderately well drained soils that formed in glacial till deposits on ridges and drumlins. Slope ranges from 0 to 8 percent.

Bombay soils are commonly near well drained Madrid soils, well drained and moderately well drained Galway soils, moderately well drained Collamer soils, and somewhat poorly drained Niagara soils. Unlike Madrid soils, they have mottles in the upper part of the subsoil. They are deeper to bedrock than Galway soils and have more coarse fragments than Collamer and Niagara soils.

Typical pedon of Bombay loam, 3 to 8 percent slopes, in the town of Ellisburg, 100 feet east of McDonald Road and 800 feet north of the intersection with Gilbert Road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam; moderate fine and very fine granular structure; very friable; many fine and few medium roots; 12 percent coarse fragments; moderately acid; clear wavy boundary.

Bw—8 to 13 inches; dark brown (10YR 4/3) loam, dark yellowish brown (10YR 4/4) rubbed; few fine faint yellowish brown (10YR 5/4 and 5/6) mottles; weak fine and medium subangular blocky structure parting to weak fine granular; very friable; common fine roots; common fine discontinuous tubular pores; 18 percent coarse fragments; slightly acid; clear smooth boundary.

E/Bt—13 to 17 inches; brown (10YR 5/3) loam (E part), very pale brown (10YR 7/3) dry; common fine distinct strong brown (7.5YR 5/6 and 5/8) mottles; weak thin and medium platy structure; friable; common fine roots; few fine discontinuous pores, some thinly lined with clay; numerous bleached sand grains on surfaces of peds; dark brown (10YR 3/3) Bt part makes up 20 percent of horizon; 15 percent coarse fragments; slightly acid; gradual wavy boundary.

Bt/E—17 to 29 inches; dark brown (10YR 3/3) gravelly fine sandy loam (Bt part); common medium distinct dark yellowish brown (10YR 4/4) mottles; weak platy structure parting to weak medium and fine subangular blocky; friable; few fine and very fine roots; common fine and few medium pores, some thinly lined with clay; 1 mm thick clay patches on faces of some peds; bleached sand grains on surfaces of peds; 30 percent pale brown (10YR 6/3) E material along some ped faces; 20 percent coarse fragments; slightly acid; gradual wavy boundary.

Bt—29 to 39 inches; dark brown (10YR 3/3) gravelly fine sandy loam; common medium distinct yellowish brown (10YR 5/6 and 5/8), common fine faint brown (10YR 5/3), and few medium distinct grayish brown (10YR 5/2) mottles; weak coarse and medium subangular blocky structure; firm; common fine pores thinly lined with clay; patchy clay on faces of peds and clay bridging some sand grains; less than 10 percent A-horizon-like material along a few vertical faces of peds in the upper part; 20 percent coarse fragments; neutral; gradual irregular boundary.

C—39 to 65 inches; grayish brown (10YR 5/2) gravelly fine sandy loam; few fine distinct olive brown (2.5Y 4/4) mottles on edges of plates; weak thin and medium platy structure; firm; 30 percent coarse fragments, 5 percent more than 3 inches long; strongly effervescence; moderately alkaline.

The solum ranges from 30 to 45 inches in thickness. Bedrock is at a depth of more than 60 inches. Coarse fragments range from 5 to 15 percent in the surface layer, from 5 to 35 percent in the subsoil, and from 10 to 30 percent in the substratum. Depth to carbonates ranges from 30 to 60 inches. Reaction ranges from strongly acid to slightly acid in the surface layer, from strongly acid to neutral in the subsoil, and from neutral to moderately alkaline in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2. Its texture is loam or silt loam.

Some pedons have an E horizon that has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 2 to 4. Its texture is loam or silt loam in the fine earth fraction.

The E/Bt and Bt/E horizons have interfingering of E material in the Bt material. The color and texture of the E part is the same as the E horizon, and the color and texture of the Bt part is the same as the Bt horizon.

The Bt horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 3 or 4. Its texture is loam, silt loam, or fine sandy loam in the fine earth fraction. Its structure is weak or moderate, medium or coarse subangular blocky or platy. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is loam to fine sandy loam in the fine earth fraction. It is massive or has weak or moderate thick platy structure. Its consistence is friable or firm. Some pedons do not have a C horizon.

Bonaparte Series

The Bonaparte series consists of very deep, excessively drained soils that formed in outwash deposits of sand and gravel derived mainly from limestone and Grenville marble. These soils are on outwash plains, kames, and eskers. Slope ranges from 0 to 15 percent.

Bonaparte soils are commonly near excessively drained Plainfield and Windsor soils. They have a higher content of gravel in the solum than Plainfield and Windsor soils.

Typical pedon of Bonaparte gravelly loamy fine sand, 0 to 8 percent slopes, in the town of Antwerp, west of State Route 11 and 0.5 mile southwest of the St. Lawrence County line, in a gravel pit:

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly loamy fine sand; weak fine granular structure; very friable; many fine roots; many fine

pores; 20 percent coarse fragments; slightly acid; clear smooth boundary.

Bw1—5 to 20 inches; brown (7.5YR 5/4) gravelly loamy fine sand; weak very fine granular structure; very friable; common fine roots; many fine pores; 25 percent coarse fragments; slightly acid; clear wavy boundary.

Bw2—20 to 26 inches; dark brown and brown (7.5YR 4/4) very gravelly loamy fine sand; very weak fine granular structure; very friable; few roots; many fine pores; 35 percent coarse fragments; neutral; clear irregular boundary.

2C—26 to 60 inches; brown (7.5YR 5/2), grayish brown (10YR 5/2), and dark grayish brown (10YR 4/2) sand, very gravelly sand, and gravel and white (10YR 8/2) calcite in cross-bedded layers; single grain; loose; no roots; 50 percent coarse fragments; strong effervescence; moderately alkaline.

The thickness of the solum ranges from 16 to 36 inches. It generally is the same as the depth to carbonates. Texture of all horizons below a depth of 10 inches is loamy fine sand or coarser. Coarse fragments range from 15 to 35 percent, by volume, in the surface layer and from 25 to 60 percent in the subsoil. They make up 40 percent or more of the volume at a depth of 10 to 40 inches. Reaction ranges from strongly acid to neutral in the solum and is mildly alkaline or moderately alkaline in the C horizon.

The Ap horizon has hue of 2.5Y to 7.5YR, value of 3 to 5, and chroma of 2 or 3. Its texture is fine sandy loam to loamy sand in the fine earth fraction.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Its texture is loamy fine sand or loamy sand in the fine earth fraction. Some pedons have thin, gravel-free subhorizons. Structure is granular, or the horizon is single grain.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 8, and chroma of 2 to 8. Its texture is very gravelly or very cobbly sand, or the horizon is stratified sand and gravel.

Boots Series

The Boots series consists of very poorly drained soils that formed in herbaceous organic deposits more than 51 inches thick. These soils are in bogs and depressions within lake plains, till plains, outwash plains, and in morainic topography. Slope is less than 1 percent.

Boots soils are commonly near Palms soils near the edge of some of the larger bogs. Boots soils have deeper organic deposits than Palms soils. Also, they are near rock outcrops or ledges at the edge of some bogs and Fluvaquents and Udifluvents where streams inlet or outlet from the bogs. Boots soils have a higher organic content than Udifluvents and Fluvaquents.

Typical pedon of Boots muck, in the town of Orleans, in the Perch River Game Management Area between Perch Lake and Dog Hill Road, about 50 feet off the end of a canal cut into the bog from Perch Lake:

Oi—5 inches to 0; living sphagnum moss.

Oa—0 to 11 inches; very dark gray (5YR 3/1) and dark reddish brown (5YR 3/2) broken face, dark reddish brown (5YR 3/2) rubbed and pressed muck (sapric material); about 40 percent fiber, less than 15 percent rubbed; massive; friable; common roots; primarily herbaceous fibers; slightly acid; abrupt smooth boundary.

Oe1—11 to 46 inches; dark reddish brown (5YR 3/3) broken face and rubbed mucky peat (hemic material); about 70 percent fiber, 25 percent rubbed; massive; friable; common roots; primarily herbaceous fibers; slightly acid; abrupt smooth boundary.

Oe2—46 to 100 inches; reddish brown (5YR 4/4) broken face, dark brown (7.5YR 4/4) rubbed mucky peat (hemic material); about 70 percent fiber, 30 percent rubbed; massive; friable; common to few roots; mainly herbaceous fibers; slightly acid; abrupt smooth boundary.

2Cg—100 to 140 inches; dark reddish brown (5YR 3/3), dark reddish gray (5YR 4/2), and dark grayish brown (10YR 4/2) clay and silt; massive; sticky and plastic; neutral.

The organic layers are more than 51 inches thick. The organic material consists mainly of moderately decomposed herbaceous fibers. Some pedons contain as much as 15 percent, by volume, woody fragments that cannot be crushed between the fingers. Reaction of the organic layers is typically slightly acid or neutral, but ranges from moderately acid to neutral. The estimated mean annual soil temperature ranges from 47 to 59 degrees F. In some pedons thin organic layers contain as much as 20 percent, by volume, mineral material.

The surface tier is predominantly sapric material, but in some pedons it is hemic material.

The layers in the subsurface and bottom tiers have hue of 10YR, 7.5YR, or 5YR, value of 2 to 4, and chroma of 1 to 4. These layers are commonly massive, but in some pedons they have weak coarse subangular blocky or weak platy structure.

The layers in the subsurface and bottom tiers are predominantly hemic material. In some pedons layers of sapric materials are within the subsurface and bottom tiers, but total thickness is less than 10 inches. The subsurface and bottom tiers commonly have weak platy structure, or they are massive.

Canandaigua Series

The Canandaigua series consists of very deep, poorly drained and very poorly drained soils that formed in lake

deposits on glacial lake plains. Slope ranges from 0 to 3 percent.

Canandaigua soils are commonly near moderately well drained Collamer soils, somewhat poorly drained Niagara soils, somewhat poorly drained Minoa soils, and poorly drained and very poorly drained Lamson soils. Canandaigua soils are siltier than loamy Minoa and Lamson soils.

Typical pedon of Canandaigua silt loam, in the town of Henderson, 0.5 mile southwest of the intersection of Butterfield and Shear Roads and 800 feet west of Butterfield Road on the north side of Sandy Creek:

Ap1—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; many fine and very fine roots; neutral; abrupt smooth boundary.

Ap2—4 to 10 inches; very dark gray (10YR 3/1) clay loam; common fine distinct yellowish red (5YR 5/6) mottles; weak medium and fine subangular blocky structure; very friable; many fine and very fine roots; few fine discontinuous tubular pores; few skeletans; slightly acid; abrupt smooth boundary.

Bg1—10 to 16 inches; very dark grayish brown (10YR 3/2) silt loam; common fine and medium distinct yellowish red (5YR 4/6) and dark red (2.5YR 3/6) mottles; weak medium and fine subangular blocky structure; very friable; common fine and few medium roots; no pores; some skeletans on faces of peds; neutral; clear wavy boundary.

Bg2—16 to 30 inches; dark grayish brown (10YR 4/2) silt loam; many fine distinct yellowish red (5YR 5/8) mottles; moderate medium and fine subangular blocky structure; firm; common fine roots; common fine discontinuous tubular pores; few macro pores filled with very dark gray (10YR 3/1) material; neutral; clear wavy boundary.

Bg3—30 to 43 inches; grayish brown (10YR 5/2) silt loam; many fine faint yellowish red (5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine and very fine roots; common fine continuous tubular pores; ped faces are coated with very pale brown (10YR 7/3) sand and silt; neutral; clear wavy boundary.

BC—43 to 58 inches; dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) silt loam; weak coarse subangular blocky structure; weak thin platy structure in the lower part; firm; few very fine roots; few fine discontinuous tubular pores; ped faces are gray (10YR 5/1); some faces of peds are coated with silt and sand; 2 percent coarse fragments; mildly alkaline; gradual wavy boundary.

C—58 to 72 inches; dark grayish brown (10YR 4/2) and brown (10YR 4/3) silty clay loam; few fine faint yellowish brown (10YR 5/6) mottles; moderate thick platy structure; firm; few fine discontinuous cylindrical pores; strong effervescence; moderately alkaline.

The solum ranges from 20 to 68 inches in thickness. Very few or no coarse fragments are in the solum and the substratum. Reaction ranges from moderately acid to mildly alkaline in the solum and from neutral to moderately alkaline in the substratum.

The Ap, or A, horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3 (less than 5.5 dry), and chroma of 0 to 2. It is mucky silt loam or silt loam to clay loam.

The Bg horizon is neutral or has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 0 to 2. High chroma mottling makes up more than 20 percent of the volume. Texture of the horizon is very fine sandy loam to silty clay loam. Structure is moderate to weak medium subangular blocky. Consistence is very friable to firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2. Its texture is silty clay loam, silt loam, or very fine sandy loam that, in some pedons, has thin strata of sand.

Carbondale Series

The Carbondale series consists of very deep, very poorly drained soils that formed in organic deposits more than 51 inches thick. These soils are in bogs and depressions mainly on uplands. Slope ranges from 0 to 3 percent.

Carbondale soils are commonly near well drained Bice soils and well drained and moderately well drained Pinckney soils. Carbondale soils have a higher organic matter content than these soils. They are also near poorly drained and very poorly drained Ensley soils. They have a higher organic matter content than these soils.

Typical pedon of Carbondale muck, in the town of Worth, 1.7 miles southeast of the intersection of 7 X 9 Corners Road and Waite Road, 100 feet northeast of Waite Road:

Oa1—0 to 4 inches; dark reddish brown (5YR 3/2) broken face and pressed, very dark gray (5Y 3/1) rubbed muck (sapric material); about 25 percent fiber, less than 10 percent rubbed; weak medium granular structure; very friable; mainly herbaceous and sphagnum fibers; strongly acid; abrupt smooth boundary.

Oa2—4 to 10 inches; black (5YR 2/1) broken face and pressed, dark reddish brown (5YR 2/2) rubbed muck (sapric material); about 25 percent fiber, less than 10 percent rubbed; weak medium granular structure; very friable; mainly herbaceous and sphagnum fibers; strongly acid; abrupt smooth boundary.

Oa3—10 to 36 inches; black (5YR 2/1) broken face, pressed, and rubbed muck (sapric material); about 16 percent fiber, less than 5 percent rubbed;

moderate medium subangular blocky structure within thick plates; friable; primarily herbaceous and woody fibers; 5 percent wood fragments; strongly acid; abrupt smooth boundary.

Oe1—36 to 55 inches; dark reddish brown (5YR 3/2) broken face, dark reddish brown (5YR 2/2) pressed and rubbed mucky peat (hemic material); about 65 percent fiber, less than 35 percent rubbed; moderate medium subangular blocky structure in thick plates; friable; mainly herbaceous and woody fibers; 2 percent wood fragments; moderately acid; abrupt smooth boundary.

Oe2—55 to 92 inches; dark brown (7.5YR 4/4) and dark reddish brown (5YR 3/3) broken face, very dark grayish brown (10YR 3/2) pressed, dark brown (10YR 3/3) rubbed mucky peat (hemic material); about 80 percent fiber, less than 45 percent rubbed; massive; friable; mainly herbaceous and wood fibers; 2 percent wood fragments; moderately acid.

The organic layers are more than 51 inches thick. The estimated mean annual soil temperature ranges from 37 to 47 degrees F. Some pedons have wood fragments, from 1 to 6 inches in diameter, throughout. Reaction ranges from strongly acid to mildly alkaline.

The surface tier has hue of 5YR, value of 2 or 3, and chroma of 1 or 2. It contains sapric or hemic materials or both. Its structure generally is granular, but in some pedons it is mainly weak or moderate coarse blocky or prismatic. It commonly is derived from herbaceous plants, but some pedons have a moderate amount of woody material.

The subsurface tier has hue of 5YR, value of 2 or 3, and chroma of 1 or 2. Woody materials typically comprise minor amounts of the recognizable fiber. Sapric material makes up more than one-half of the volume. In pedons that contain sapric, fibric, and hemic materials, sapric material is the largest component. This tier is commonly massive, but some of it is broken into thick to thin plates, apparently because of the mode of deposition.

The bottom tier has hue of 5YR to 10YR, value of 2 to 4, and chroma of 1 to 4. It is dominantly hemic material, but in some pedons it is hemic material. More than 10 inches of the subsurface and bottom tiers is hemic material.

Carlisle Series

The Carlisle series consists of very deep, very poorly drained soils that formed in woody and herbaceous, organic deposits more than 51 inches thick. These soils are in bogs and depressions on lowland plains. Slope ranges from 0 to 3 percent.

Carlisle soils are commonly near very poorly drained Palms and Willette soils in some of the larger bogs. Carlisle soils formed in deeper organic deposits than Palms and Willette soils. Palms soils are underlain by loamy material. Willette soils are underlain by clayey material.

Typical pedon of Carlisle muck, in the town of Theresa, 3,000 feet northwest of the intersection of George and Fredericks Roads and 130 feet north of George Road:

Oa1—0 to 19 inches; black (5Y 2/1) broken face and rubbed or pressed muck (sapric material); about 2 percent undisturbed fibers; moderate fine granular structure; very friable; slightly acid; abrupt smooth boundary.

Oa2—19 to 48 inches; dark brown (7.5YR 3/2) broken face, rubbed, or pressed muck (sapric material); about 10 percent undisturbed fibers, 3 percent rubbed; massive; friable; nonsticky; slightly acid; abrupt smooth boundary.

Oa3—48 to 63 inches; dark reddish brown (5YR 3/2) broken face and pressed, dark brown (7.5YR 3/2) rubbed muck (sapric material); about 15 percent undisturbed fibers, 3 percent rubbed; massive; slightly plastic; nonsticky; neutral.

The organic deposits are more than 51 inches thick. The fiber is mostly from woody plants and partly from herbaceous plant material. Thin layers of hemic or fibric material are in some pedons, but total less than 10 inches of the combined thickness of the surface and subsurface layers. In some pedons woody coarse fragments, consisting of twigs, stems, and some logs, make up 10 to 20 percent of the volume. Reaction throughout the organic material ranges from very strongly acid to neutral. The estimated mean annual soil temperature ranges from 47 to 59 degrees F.

The surface tier has hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 or 2 on broken face and rubbed material. Rubbed fiber makes up less than one-sixth of the total volume. Structure is weak or moderate, fine or medium granular. Consistence is friable or very friable.

The subsurface and bottom tiers have hue of 10YR, 7.5YR, or 5YR, value of 2 or 3, and chroma of 0 to 3 on broken face and rubbed material. Their structure is weak thin or thick platy, or the tiers are massive.

Chatfield Series

The Chatfield series consists of moderately deep, well drained and somewhat excessively drained soils on low-lying ridges of glacial till plains with a core of bedrock. These soils formed in a mantle of glacial till derived mainly from gneiss, granite, or schist and partly from Grenville marble. Slopes ranges from 0 to 35 percent.

Chatfield soils are commonly near shallow, well drained and somewhat excessively drained Hollis soils and very shallow, excessively drained and somewhat excessively drained Galo soils on ridges with a core of bedrock, in the uplands. Chatfield soils are deeper than

Hollis and Galoo soils. Chatfield soils are near very deep, somewhat poorly drained Rhinebeck soils and poorly drained and very poorly drained Madalin soils on lake plains. Chatfield soils are not as deep as and are more loamy than Rhinebeck and Madalin soils.

Typical pedon of Chatfield loam, in an area of Chatfield-Rock outcrop complex, rolling, in the town of Theresa, 1,650 feet south of the intersection of New York Route 411 and County Route 46, and 132 feet east of County Route 46:

Oi—1 inch to 0; raw leaf litter, mostly grasses and deciduous material.

A—0 to 4 inches; dark brown (7.5YR 3/2) loam; weak fine and medium granular structure; very friable; common fine and medium roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

Bw1—4 to 8 inches; dark brown (7.5YR 4/4) loam; weak fine and medium subangular blocky structure; friable; common fine and medium roots; 10 percent coarse fragments; strongly acid; clear wavy boundary.

Bw2—8 to 20 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common roots; 10 percent coarse fragments; common roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

C—20 to 30 inches; brown (10YR 5/3) sandy loam; massive; friable; few roots; 14 percent coarse fragments; strongly acid; clear wavy boundary.

R—30 inches; gneiss bedrock.

The solum ranges from 18 to 36 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Coarse fragments range from about 5 to 15 percent, by volume, in the surface layer and from 5 to 35 percent in the subsoil and the substratum. Reaction ranges from very strongly acid to moderately acid.

The Ap, or A, horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is loam or sandy loam and, in a few pedons, fine sandy loam or silt loam.

The B horizon has hue of 7.5YR to 2.5Y and value and chroma of 4 to 6. Its texture is loam or sandy loam and, in a few pedons, fine sandy loam or silt loam. Its structure is weak or moderate, fine or medium, granular or blocky. Its consistence is friable or very friable.

The C horizon is similar to the B horizon, except that it is more platy or is massive. Some pedons do not have a C horizon.

The underlying bedrock is gneiss or granite.

Chaumont Series

The Chaumont series consists of moderately deep, somewhat poorly drained soils that formed in clayey lacustrine sediments on lake plains. Slope ranges from 0 to 8 percent.

Chaumont soils are commonly near moderately deep, moderately well drained Wilpoint soils, poorly drained Covington soils, and very poorly drained Livingston soils. Chaumont soils are not as deep to bedrock as Covington and Livingston soils.

Typical pedon of Chaumont silty clay, 0 to 3 percent slopes, in the town of Lyme, 0.5 mile south of the intersection of Moffet Road and New York Route 12E, and 160 feet west of Moffet Road:

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silty clay; moderate fine granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

BA—5 to 11 inches; grayish brown (10YR 5/2) clay; common fine distinct brown (7.5YR 4/4) and strong brown (7.5YR 5/6) mottles; common fine faint brown (10YR 4/3) mottles; mottles in aggregate make up about 50 percent of horizon color; moderate fine subangular blocky structure; friable; sticky and plastic; common fine roots; few fine pores; few thin discontinuous clay skins; moderately acid; clear wavy boundary.

Bt1—11 to 14 inches; dark grayish brown (10YR 4/2) clay; common fine faint brown (10YR 4/3) mottles; moderate very fine subangular blocky structure; firm; sticky and very plastic; few fine roots; common fine pores; face of peds are gray (10YR 5/1); continuous thin clay skins on peds and in pores; slightly acid; clear smooth boundary.

Bt2—14 to 22 inches; dark grayish brown (10YR 4/2) clay; few fine distinct dark gray (N 4/0) mottles; moderate very fine subangular blocky structure; firm; sticky and very plastic; few fine roots; few fine pores; continuous thin clay skins on peds and in pores; neutral; abrupt wavy boundary.

BC—22 to 27 inches; dark grayish brown (2.5Y 4/2) silty clay; few fine distinct brown (7.5YR 5/2) mottles; strong thick and medium platy structure parting to moderate fine and very fine blocky; firm; sticky and plastic; few fine roots; faces of peds are gray (10YR 5/1); discontinuous thin clay skins on some peds; about 10 percent pinkish gray (5YR 7/2) soft lime nodules and few firm lime nodules; moderate effervescence; moderately alkaline; abrupt smooth boundary.

2R—27 inches; massive, level-bedded limestone bedrock.

The solum ranges from 10 to 38 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Most pedons do not have coarse fragments, but in some pedons they range to 5 percent, by volume. Reaction is moderately acid to neutral in the upper part of the solum and neutral to moderately alkaline in the lower part of the solum and the substratum.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silty clay loam,

silty clay, or clay. Its structure is moderate or strong, very fine to coarse granular or blocky. Its consistence is friable or firm. Some pedons have a thin E horizon that has chroma of 1 and that ranges to silt loam in texture.

The BA horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3. It is mottled. Its texture is silty clay loam, silty clay, or clay. Its structure is weak or moderate, very fine to medium subangular blocky. Its consistence is friable or firm. Some pedons do not have a BA horizon.

The Bt horizon has hue of 10YR to 5Y and value of 3 or 4. It is mottled. Its structure is moderate or strong, very fine to coarse subangular or angular blocky. Its consistence is friable or firm, sticky or very sticky, and plastic or very plastic.

The BC, or C, horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. It is mottled. Its texture is silty clay or clay. Its structure is fine or very fine blocky structure within thick to medium plates or prisms. The C horizon is massive or massive within very coarse prisms, and is calcareous. Some pedons do not have a BC or C horizon.

The R horizon is massive or bedded limestone.

Claverack Series

The Claverack series consists of very deep, moderately well drained soils that formed in a sandy mantle overlying clayey lake sediments. These soils are on deltas near glacial lake plains. Slope ranges from 0 to 8 percent.

Claverack soils are commonly near moderately well drained Elmridge soils and somewhat poorly drained Shaker soils. Claverack soils are sandier than Elmridge soils. Claverack soils are also near moderately well drained Hudson soils and somewhat poorly drained Rhinebeck soils. Unlike these soils, Claverack soils have a sandy mantle.

Typical pedon of Claverack loamy fine sand, 0 to 3 percent slopes, in the town of Cape Vincent, 1,600 feet northeast of the intersection of County Routes 8 and 4, and 100 feet west of County Route 4:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loamy fine sand, dark brown (10YR 3/3) rubbed; weak very fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bw1—8 to 14 inches; pale brown (10YR 6/3) loamy sand; common medium distinct dark brown (7.5YR 4/4) and dark reddish brown (5YR 3/3) mottles; weak fine subangular blocky structure; very friable; common medium roots; moderately acid; abrupt wavy boundary.

Bw2—14 to 21 inches; brown (7.5YR 4/4) loamy sand, light yellowish brown (10YR 6/4) and very pale brown (10YR 7/3) grading to loamy fine sand and fine sand; massive; very friable; common to few medium roots; moderately acid; abrupt smooth boundary.

2BC—21 to 40 inches; dark grayish brown (10YR 4/2) silty clay; few fine faint dark grayish brown (2.5Y 4/2) and few fine distinct strong brown (7.5YR 5/6) mottles; weak fine and very fine angular and subangular blocky structure; firm; plastic; 40 percent clay; neutral; clear smooth boundary.

2C—40 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; manganese stainings; weak medium platy structure; firm; strong effervescence; mildly alkaline.

The thickness of the solum and depth to underlying fine textured material range from 20 to 40 inches. Depth to bedrock is more than 60 inches. Most pedons do not have coarse fragments, but some pedons have a few small pebbles. Reaction ranges from strongly acid to neutral in the upper part of the solum and from neutral to moderately alkaline in the underlying, fine material. Some pedons do not have carbonates.

The Ap, or A1, horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is loamy fine sand or loamy sand.

The B horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 2 to 4. Its texture is loamy fine sand, loamy sand, sand, or fine sand. Its structure is very weak, very fine to medium subangular blocky, or the horizon is massive.

The 2BC horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silty clay loam, silty clay, or clay. Its structure is weak, very fine or fine angular and subangular blocky.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Its texture is silty clay loam to clay. Its structure is platy, and is a consequence of the depositional varves.

These soils are a taxajunct to the Claverack series because they have a cambic horizon in the upper part of the clayey material. This difference does not significantly affect use and management of the soils.

Collamer Series

The Collamer series consist of deep and very deep, moderately well drained soils that formed in lacustrine silt and clay on lake plains. Slope ranges from 3 to 15 percent.

Collamer soils are commonly near somewhat poorly drained Niagara soils and poorly drained and very poorly drained Canandaigua soils. Collamer soils are similar to these soils. They are near well drained Madrid and Nellis soils on ridges. They have fewer coarse fragments than these soils.

Typical pedon of Collamer silt loam, 3 to 8 percent slopes, in the town of Ellisburg; 1,050 feet west of Machold Road and 20 feet north of Chamberlain Road:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; friable; common medium and large roots; neutral; abrupt smooth boundary.

E—8 to 14 inches; yellowish brown (10YR 5/4) silt loam; pale brown (10YR 6/3) vertical streaks; few, fine, distinct thread-like stains, strong brown (7.5YR 5/6); weak thin platy structure parting to moderate weak subangular blocky; friable; common fine roots; many fine pores; slightly acid; clear wavy boundary.

E/B—14 to 18 inches; (E part) vertical streaks of light brownish gray (10YR 6/2) silt loam; (B part) brown (10YR 5/3 and 4/3) and dark yellowish brown (10YR 4/4) silt loam; common, medium, distinct yellowish brown (10YR 5/6) and many, medium, distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; slightly acid; clear wavy boundary.

B/E—18 to 26 inches; (B part) brown (10YR 4/3) silt loam to silty clay loam; common, medium faint yellowish brown (10YR 5/6) and common, medium, faint strong brown (7.5YR 5/6) mottles; strong medium and coarse prismatic structure parting to strong medium subangular blocky; firm; few fine roots; common fine pores lined with clay; clay flow on faces of peds; (E part) vertical streaks of light grayish brown (10YR 6/2) silt loam; slightly acid; clear wavy boundary.

Bt—26 to 32 inches; brown (10YR 4/3) silty clay loam; common, medium, faint yellowish brown (10YR 5/6) and common, medium distinct strong brown (7.5YR 5/6) mottles; faces of some peds have light brownish gray (10YR 6/2) ped surfaces; few black (10YR 2/1) stains; strong medium subangular blocky structure; firm; common fine pores lined with clay; clay flow on ped surface; slightly acid; clear wavy boundary.

C—32 to 60 inches; stratified silt, fine sand, and light clay; grayish brown (10YR 5/2) with many, medium, faint yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; weak medium platy structure in places; firm; slightly acid.

The solum ranges from 24 to 48 inches in thickness. In some pedons bedrock is at a depth of 40 to 72 inches. Depth to carbonates ranges from 20 to 72 inches. Coarse fragments range from 0 to 5 percent throughout. Reaction ranges from strongly acid to neutral in the A and A/B horizons, moderately acid to mildly alkaline in the B horizon, and slightly acid to moderately alkaline in the C horizon.

The Ap has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam to fine sandy loam.

The E horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 to 4. It has high chroma mottles. It is silt loam to fine sandy loam. It is massive, or its structure is platy or subangular blocky. Its consistence is very friable to firm.

The E/B and B/E horizons have properties like those of the E horizon on the surface of peds and like those of the Bt horizon inside peds. Both horizons have high chroma mottles. Some mottles or some ped surfaces have chroma of 2 or less in the upper 10 inches of the argillic horizon.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Both have high and low chroma mottles. Some ped surfaces have chroma of 2 or less. Texture of the horizon ranges from silt loam to silty clay loam and sandy clay loam. Its structure is blocky or prismatic.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. It is silty clay loam to stratified silt, very fine sand, and clay, or it is varved.

Covington Series

The Covington series consists of very deep, poorly drained soils that formed in lacustrine and estuarine deposits of clay and silt on lowland lake plains. Slope ranges from 0 to 3 percent.

Covington soils are similar to and commonly near moderately well drained Vergennes soils, somewhat poorly drained Kingsbury soils, and very poorly drained Livingston soils.

Typical pedon of Covington silty clay, in the town of Cape Vincent, southeast of the village of Cape Vincent; 4,200 feet east of the intersection of New York Route 12E and Favret Road, and 50 feet southeast of Favret Road:

Ap—0 to 6 inches; very dark gray (10YR 3/1) silty clay; gray (10YR 5/1) smoothed and dry; strong fine and medium subangular blocky structure; friable; many fibrous roots; slightly acid; clear wavy boundary.

Btg1—6 to 11 inches; dark gray (10YR 4/1) clay; common medium faint dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles across broken peds; moderate coarse prisms break to strong fine and medium angular blocky structure; firm; sticky and plastic; few roots; common fine pores with clay linings; thin silt coating on prism faces; slightly acid; clear gradual boundary.

Btg2—11 to 27 inches; gray (5Y 5/1) clay; common medium prominent dark yellowish brown (10YR 4/4) and common medium distinct olive brown (2.5Y 4/4) mottles; moderate coarse prisms parting to strong fine and angular blocky structure; very firm; very sticky and very plastic; very few roots; few medium pores with thick clay linings; clay coating on faces of peds are dark gray (5Y 4/1); neutral; clear gradual boundary.

Btg3—27 to 32 inches; grayish brown (2.5Y 5/2) clay; common fine faint olive brown (2.5Y 4/4) and light

olive brown (2.5Y 5/4) mottles across broken peds; moderate coarse prisms break to strong fine and medium angular blocky structure; very firm; very sticky and very plastic; very few roots; clay coatings on faces of peds; neutral; clear wavy boundary.

CBg—32 to 45 inches; gray (N 5/0) silty clay; common fine faint olive brown (2.5Y 4/4) mottles; crude, moderate coarse prisms break to strong medium angular blocky structure, or rock structure; firm; sticky and plastic; few segregated streaks of light gray (5Y 7/1) free lime; weak effervescence; mildly alkaline; abrupt smooth boundary.

Cg—43 to 64 inches; gray (5Y 5/1) silty clay; few fine faint olive brown (2.5Y 4/4) mottles; crude moderate coarse massive prisms break to strong medium angular blocky structure, or rock structure; firm; sticky and plastic; few segregated bodies of light gray (5Y 7/1) free lime; grades to interbedded clays and silts; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. Carbonates are commonly at a depth of 20 to 60 inches. Bedrock is at a depth of more than 60 inches. Most pedons do not have coarse fragments, but in some pedons they range to 3 percent, by volume. Reaction ranges from moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and neutral to moderately alkaline in the substratum.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 or 3 moist and 5.5 or less dry, and chroma of 1 or 2.

The B horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. It has mottles of high chroma ranging from few to many and distinct. Its texture is clay. Its structure is moderate or strong, very fine to medium angular blocky in coarse prisms. Its consistence is firm or very firm. Both horizontal and vertical surfaces of peds have thick films of oriented clay.

The C horizon is neutral or has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2. Its texture is clay or silty clay, and in some pedons has thin lenses of silts and very fine sand. Its structure is prismatic or blocky, or the horizon is varved. Its consistence is firm or very firm.

Danley Series

The Danley series consists of very deep, moderately well drained soils that formed in glacial till derived mainly from dark shale. These soils are mainly on upland glacial till plains. Slope ranges from 3 to 25 percent.

Danley soils are commonly near somewhat poorly drained Darien soils, well drained Bice soils, well drained and moderately well drained Haights soils, well drained Lagross soils, and somewhat poorly drained Angola soils. Danley soils are similar to Darien soils and are more clayey and have more shale coarse fragments than Bice soils. Danley soils are deeper than Angola soils and are higher in clay content in the subsoil than Haights and Lagross soils.

Typical pedon of Danley silt loam, 3 to 8 percent slopes, in the town of Rodman; 1.9 miles east of the intersection of New York 177 and Williams Road, and 55 feet north of Williams Road:

Ap—0 to 8 inches; dark brown (10YR 3/3) loam; weak medium subangular blocky structure; very friable; many fine and few medium roots; 5 percent shale fragments; strongly acid; abrupt smooth boundary.

E—8 to 14 inches; grayish brown (10YR 5/2) silt loam; pale brown (10YR 6/3) dry; common medium faint yellowish brown (10YR 5/6) mottles; weak medium and fine subangular blocky structure parting to weak thin platy; friable; common fine roots; 5 percent shale fragments; moderately acid; clear wavy boundary.

B/E—14 to 26 inches; brown (10YR 4/3) shaly clay loam (B part); common fine faint dark yellowish brown (10YR 4/4) and common medium faint, grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; moderate medium and fine subangular blocky structure; firm; few fine roots; common fine pores; some pores with clay linings and some faces of peds with patchy clay skins; vertical faces of peds have brown (10YR 5/3) and light brownish gray (10YR 6/2), dry, and pale brown (10YR 6/3) dry silt coatings (E part); 15 percent shale fragments; moderately acid; clear wavy boundary.

B2t—26 to 36 inches; dark brown (10YR 4/3) shaly clay loam; common fine faint dark yellowish brown (10YR 4/4) and dark grayish brown (10YR 4/2) mottles; moderate medium prismatic structure parting to medium and fine subangular blocky; firm; few fine roots along faces of prisms; common fine and medium pores with clay linings; most ped faces have medium thick clay skins; 20 percent coarse fragments; neutral; clear wavy boundary.

BC—36 to 46 inches; dark grayish brown (10YR 4/2) shaly clay loam; common medium faint dark yellowish brown (10YR 4/4) and light brownish gray (10YR 6/2) mottles; weak medium and fine subangular blocky structure; firm; few fine and medium pores, some with clay linings; some ped faces with patchy clay skins; 20 percent shale fragments; weak effervescence; mildly alkaline; clear wavy boundary.

C—46 to 60 inches; dark grayish brown (10YR 4/2) shaly loam; few fine faint dark yellowish brown (10YR 4/4) and brown (10YR 4/3) mottles; weak medium platy structure; firm; 35 percent shale fragments; strong effervescence; moderately alkaline.

The solum ranges from 3 to 50 inches in thickness. Depth to carbonates ranges from 30 to 60 inches. Rock fragments range from 2 to 15 percent in the surface

layer and from 2 to 35 percent in the subsoil, including as much as 5 percent more than 3 inches in diameter. Rock fragments range from 10 to 50 percent in the substratum, including 5 to 10 percent more than 3 inches in diameter. Reaction ranges from strongly acid to moderately acid in the surface layer and in the upper part of the subsoil, moderately acid to mildly alkaline in the lower part of the subsoil, and mildly alkaline or moderately alkaline in the substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is loam, silt loam, or silty clay loam. Its structure is weak or moderate, fine or medium granular or subangular blocky. Its consistence is friable or very friable.

The E horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or 3. Some pedons have few to common, faint to distinct, high chroma mottles. Texture of the horizon is loam, silt loam, or light silty clay loam in the fine earth fraction. Its structure is weak or moderate, fine or medium, subangular blocky structure, or the horizon is platy. Its consistence is friable or firm.

The B/E horizon (B part) has colors similar to those of the Bt horizon and (E part) has colors similar to those of the E horizon. This horizon has either high or low chroma mottles, or both. Its texture is silty clay loam or clay loam in the fine earth fraction. Its structure is weak or moderate, fine or medium, subangular blocky. Its consistence is friable or firm.

The Bt horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It has both high and low chroma mottles. Its texture is silty clay loam or clay loam in the fine earth fraction. Its structure is prismatic or weak or moderate, fine to coarse subangular blocky. Some pedons have a BC horizon that contains free carbonates.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is loam, clay loam, or silty clay loam in the fine earth fraction. The horizon is massive, or its structure is platy.

Darien Series

The Darien series consists of very deep, somewhat poorly drained soils that formed in glacial till derived mainly from dark shales. These soils are on glacial till plains. Slope ranges from 0 to 15 percent.

Darien soils are commonly near well drained Danley and Bice soils and moderately deep, somewhat poorly drained Angola soils. They are more clayey than Bice soils.

Typical pedon of Darien silt loam, 3 to 8 percent slopes, in the town of Rodman, 2,250 feet south-southeast of the end of Lagross Road:

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak, medium and fine granular structure; friable; many fine and few medium roots; 2 percent coarse fragments; moderately acid; abrupt smooth boundary.

Ap2—5 to 9 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine subangular blocky structure; friable; common fine and few medium roots; 2 percent coarse fragments; moderately acid; clear wavy boundary.

E—9 to 14 inches; brown (10YR 5/3) silt loam; many medium distinct yellowish brown (10YR 5/6 and 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; 2 percent coarse fragments; moderately acid; clear wavy boundary.

Btg1—14 to 20 inches; grayish brown (10YR 5/2) silty clay loam; many medium distinct strong brown (7.5YR 5/6) and few medium distinct dark brown (7.5YR 4/2) mottles; moderate medium prismatic structure parting to moderate medium and fine subangular blocky; firm; few fine roots; common fine pores lined with clay; clay films on ped faces; 10 percent coarse fragments; neutral; clear wavy boundary.

Btg2—20 to 26 inches; grayish brown (10YR 5/2) channery silty clay loam; light brownish gray (2.5Y 6/2) ped faces; few medium faint yellowish brown (10YR 5/6) and few medium distinct brownish yellow (10YR 6/6) mottles; moderate medium prismatic structure parting to moderate medium and fine subangular blocky; firm; few fine roots; common fine pores lined with clay; clay films on ped faces; 15 percent coarse fragments; neutral; clear wavy boundary.

BC—26 to 43 inches; dark grayish brown (10YR 4/2) channery clay loam; few fine distinct light olive brown mottles; medium thick platy structure; parting to weak medium subangular blocky; friable; 20 percent coarse fragments; calcareous in lower part; mildly alkaline; gradual intermittent boundary.

C—43 to 60 inches; brown (10YR 5/3) channery silt loam; few fine faint dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) mottles; weak medium platy structure; friable; 30 percent coarse fragments; weak effervescence; mildly alkaline.

The solum ranges from 30 to 45 inches in thickness. Depth to carbonates ranges from 25 to 48 inches. Coarse fragments range from 2 to 15 percent in the surface layer and from 2 to 35 percent in the subsoil, including as much as 5 percent more than 3 inches in diameter. Coarse fragments range from 5 to 60 percent in the substratum, including 5 to 10 percent more than 3 inches in diameter. Reaction ranges from moderately acid to neutral in the A horizon, from slightly acid to neutral in the Bt horizon, and from mildly alkaline to moderately alkaline in the BC and C horizons.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 4. Its texture is loam, silt loam, or silty clay loam. Its structure is fine or medium granular or

subangular blocky. Its consistence is very friable or friable.

The E horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 or 3. It is mottled. Its texture is similar to that of the Ap horizon. Its structure is subangular blocky or platy. Its consistence is friable or firm.

The B horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its texture is silt loam, clay loam, or silty clay loam in the fine earth fraction. Its structure is weak or moderate, medium or coarse, subangular blocky or angular blocky within prisms. Its consistence is friable to very firm.

The BC horizon is similar to the B2 horizon, except that gross structure is inherited from the parent material and most pedons have carbonates.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 4. Its texture is silt loam, silty clay loam, or clay loam in the fine earth fraction. The horizon is massive, or its structure is platy. Its consistence is friable, firm, or very firm. Some pedons do not have carbonates in the upper part.

Deerfield Series

The Deerfield series consists of very deep, moderately well drained soils that formed in thick deposits of water-deposited sand. These soils are on terraces, deltas, and outwash plains. Slope ranges from 0 to 8 percent.

Deerfield soils are similar to and commonly near excessively drained Windsor soils and very poorly drained Scarboro soils on sand plains.

Typical pedon of Deerfield loamy fine sand, 0 to 8 percent slopes, in the town of Wilna, on Fort Drum Military Reservation, 1.5 miles east of junction of Conrail and New York Route 3A, and 1,716 feet south of New York Route 3A:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loamy fine sand; weak very fine granular structure; very friable; common fine roots; very strongly acid; abrupt smooth boundary.

Bw1—7 to 15 inches; yellowish brown (10YR 5/6) loamy fine sand; weak very fine granular structure; very friable; few roots; strong acid; abrupt wavy boundary.

Bw2—15 to 28 inches; yellowish brown (10YR 5/4) loamy fine sand; common medium distinct strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; weak fine granular structure; very friable; few fine roots; moderately acid; clear smooth boundary.

C—28 to 60 inches; light brownish gray (10YR 6/2) fine sand; common medium distinct strong brown (7.5YR 5/6) and brown (10YR 5/3) mottles; single grain; loose; slightly acid.

The solum ranges from 15 to 35 inches in thickness. In most places the solum does not have coarse fragments, but in some pedons they range to as much as 10 percent, by volume. Reaction ranges from very strongly acid to slightly acid throughout.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. Its texture is sandy loam or loamy fine sand.

The B horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 2 to 6. Its texture is loamy fine sand to coarse sand. Its structure is very weak or weak, very fine to medium granular, or the horizon is single grain and loose. Mottles that have chroma of 2 or less are between a depth of 15 and 40 inches.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Its texture is fine sand to coarse sand. In some pedons it is mottled.

These soils are taxadjuncts to the Deerfield series because the fine sand content is higher in the subsoil and the substratum than that defined for the Deerfield series. This difference is slight and does not significantly affect use and management of the soils.

Elmridge Series

The Elmridge series consists of very deep, moderately well drained soils that formed in a loamy mantle overlying lacustrine clayey sediments. These soils are on lake plains and terraces. Slope ranges from 0 to 8 percent.

Elmridge soils are similar to and commonly near poorly drained Shaker soils and very poorly drained Whately soils. They are also near moderately well drained Hudson and Vergennes soils and somewhat poorly drained Rhinebeck and Kingsbury soils. Elmridge soils are more loamy in the upper part of the subsoil than these clayey soils.

Typical pedon of Elmridge fine sandy loam, 3 to 8 percent slopes, in the town of Theresa, 1,320 feet east of the intersection of Eddy Road and Silver Street Road, and 50 feet north of Silver Street Road:

Ap—0 to 10 inches; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bw1—10 to 18 inches; strong brown (7.5YR 5/6) fine sandy loam; weak fine and medium granular structure; very friable; common fine and medium roots; strongly acid; clear wavy boundary.

Bw2—18 to 23 inches; yellowish brown (10YR 5/6) fine sandy loam, common medium distinct strong brown (7.5YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable; common medium roots; moderately acid; abrupt wavy boundary.

2Bw3—23 to 34 inches; dark grayish brown (2.5Y 4/2) silty clay; few fine distinct strong brown (7.5YR 5/6) mottles; weak fine and medium subangular blocky

structure; firm; plastic; slightly acid; clear wavy boundary.

2C—34 to 60 inches; dark grayish brown (2.5Y 4/2) silty clay; massive; firm; plastic; neutral.

The thickness of the solum and depth to underlying fine textured material range from 20 to 40 inches. Most pedons do not have coarse fragments, but some pedons have a few small pebbles. Reaction ranges from strongly acid to slightly acid in the A and B horizons and is moderately acid to mildly alkaline in the 2B and 2C horizons. Carbonates are common in the substratum below a depth of 40 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. Its texture is fine sandy loam to loam.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. Its texture is sandy loam to loam. Its structure is weak to moderate, fine and medium granular. Its consistence is friable or very friable.

The 2B horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. Its texture is silty clay loam, clay, or silty clay. Its structure is fine and medium subangular blocky.

The 2C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 or 3. Its texture is silty clay loam to clay. Its structure is medium to thick platy, or the horizon is massive.

Ensley Series

The Ensley series consists of very deep, poorly drained and very poorly drained soils that formed in glacial till on uplands. Ensley soils are in nearly level areas and in depressions. Slope ranges from 0 to 8 percent.

Ensley soils are near Carbondale soils in depressions and bogs and well drained and moderately well drained Pinckney and Bice soils on uplands. Ensley soils do not have the organic matter content of Carbondale soils.

Typical pedon of Ensley silt loam, in an area of Pinckney-Ensley silt loams, undulating, in the town of Rodman, 1.5 miles east of New York Route 178 and Loomis Road, 150 feet south of road in reforestation tract:

Ap—0 to 8 inches; very dark brown (10YR 3/2) silt loam; moderate medium granular structure; friable; common fine roots; 3 percent coarse fragments; slightly acid; abrupt smooth boundary.

Bg—8 to 13 inches; grayish brown (10YR 5/2) sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; very dusky red (2.5YR 2/2) and dark reddish brown (2.5YR 2/4) root stains; moderate medium subangular blocky structure; friable; common fine roots; 5 percent coarse fragments; neutral; clear smooth boundary.

Bw—13 to 18 inches; yellowish brown (10YR 5/6) sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; dusky red (2.5YR 3/2) and yellowish red (5YR 4/6) root stains; moderate medium subangular blocky structure; firm; grayish brown (2.5Y 5/2) ped faces; 10 percent coarse fragments; neutral; clear wavy boundary.

BC—18 to 26 inches; grayish brown (10YR 5/2) gravelly sandy loam; common medium faint yellowish brown (10YR 5/6) mottles; massive; firm; 20 percent coarse fragments; neutral; clear wavy boundary.

C—26 to 60 inches; grayish brown (2.5Y 5/2) gravelly sandy loam; few fine faint olive (5Y 5/3) mottles; massive; firm; 20 percent coarse fragments; weak effervescence at a depth of 30 inches; mildly alkaline.

The solum ranges from 16 to 40 inches in thickness. Coarse fragments range from 2 to 10 percent, by volume, in the upper part of the solum and from 3 to 20 percent in the lower part of the solum and in the substratum. Reaction ranges from slightly acid to mildly alkaline in the surface layer, from neutral to moderately alkaline in the subsoil, and from mildly alkaline to moderately alkaline in the substratum. Some pedons have a thin, organic layer and an A1 horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 2 or 1. Its texture is silt loam to sandy loam.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6. Mottles have mainly high chroma. Texture of the horizon is sandy loam to sandy clay loam. Structure is weak or moderate subangular blocky or platy.

The BC horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 1. Its texture is gravelly sandy loam to sandy clay loam. Its structure is subangular blocky, or the horizon is massive.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 4. Its texture is gravelly sandy loam to fine sandy loam that, in some pedons, has pockets and lenses of coarse sand.

Farmington Series

The Farmington series consists of shallow, well drained and somewhat excessively drained soils that formed in glacial till or in wind- and water-laid deposits mixed with till or congeliturbate. Slope ranges from 0 to 8 percent.

Farmington soils are commonly near moderately deep, well drained and moderately well drained Galway soils and somewhat poorly drained and poorly drained Newstead soils on uplands. Farmington soils are not as deep as Galway and Newstead soils. They are also near shallow, somewhat excessively drained and excessively drained Benson soils and very shallow, excessively

drained and somewhat excessively drained Galoo soils on landscapes similar to those of Farmington soils. Farmington soils are not as gravelly as Galway soils, and are not as shallow as Galoo soils.

Typical pedon of Farmington loam, 0 to 8 percent slopes, in the town of Rutland, 1.15 miles north of County Route 48 on Miser Road, and 100 feet east of Miser Road:

Ap—0 to 8 inches; brown (10YR 4/3) loam; moderate medium granular structure; friable; many fine roots; less than 10 percent coarse fragments; strongly acid; clear smooth boundary.

Bw1—8 to 15 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable; common fine roots; less than 10 percent coarse fragments; moderately acid; clear wavy boundary.

Bw2—15 to 19 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few fine roots; less than 10 percent coarse fragments; slightly acid; abrupt smooth boundary. Few manganese coatings and bleached sand grains.

R—19 inches; gray limestone bedrock.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Coarse fragments range from 5 to 15 percent in the surface layer and from 5 to 30 percent in the subsoil. Clay content ranges from 10 to 27 percent throughout. Reaction ranges from strongly acid to slightly acid in the A horizon and from moderately acid to mildly alkaline in the B horizon. Free carbonates are not in the fine earth fraction above bedrock.

The Ap, or A1, horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is loam or silt loam.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Its texture is loam, silt loam, or fine sandy loam in the fine earth fraction. Its structure is weak blocky to granular. Its consistence is friable or very friable.

Bedrock is dominantly limestone and partly shale interbedding. In some areas it is sandstone.

Fluvaquents

Fluvaquents consist mostly of very deep, very poorly drained to somewhat poorly drained soils that have a black surface layer that is high in organic matter content. These soils have received deposits under changing currents and through shifting stream channels. They are subject to frequent flooding. They formed in recent alluvial material derived mainly from transported glacial till and lacustrine and outwash deposits. These nearly level to gently sloping soils are mainly along small creeks and rapidly flowing streams where the channel is constantly shifting. Slope ranges from 0 to 8 percent.

In most areas Fluvaquents are near Udifluvents on the higher and drier parts of alluvial flood plains. They are also commonly near other alluvial soils and marshes.

Fluvaquents differ from place to place to place. Consequently, a typical pedon is not given.

Fluvaquents have substratum layers that range from about 5 to more than 60 inches in thickness. Depth to bedrock differs, but generally is at a depth of more than 60 inches. Rock fragments range from 0 to 50 percent, by volume. In some places large stones and boulders are on the surface. Reaction ranges from very strongly acid to moderately acid in the surface layer and from very strongly acid to slightly acid in the substratum.

The surface layer is about 5 to 9 inches thick. It has hue of 7.5YR to 5Y, value of 2 or 3, and chroma of 1 or 2. It is mottled below a depth of 5 inches. Its texture is sand or fine sand to silty clay in the fine earth fraction.

The substratum to a depth of 60 inches or more has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. It has mottles that have low and high chroma. Its texture is sand or fine sand to silty clay in the fine earth fraction. The content of organic matter decreases irregularly with depth.

Galen Series

The Galen series consists of very deep, moderately well drained soils that formed in fine and very fine lacustrine sand on deltas within lake plains. Slope ranges from 0 to 8 percent.

Galen soils are similar to and commonly near well drained Arkport soils and somewhat poorly drained Minoa soils. They are also near excessively drained Groton soils, moderately well drained Deerfield soils, and moderately well drained Collamer soils. Galen soils are not as sandy and gravelly as Groton soils, not as sandy as Deerfield soils, and not as silty as Collamer soils.

Typical pedon of Galen fine sandy loam, 3 to 8 percent slopes, in the town of Hounsfield, 1,200 feet north of Military Road and 0.7 mile west of New York Route 180 and Military Road, along Muskalonge Creek:

Ap—0 to 8 inches; dark brown (10YR 3/3) fine sandy loam; weak medium granular structure; very friable; common medium and few large roots; strongly acid; abrupt smooth boundary.

Bw—8 to 14 inches; yellowish brown (10YR 5/6) very fine sandy loam; massive; friable; few medium roots; moderately acid; clear wavy boundary.

E/Bt1—14 to 26 inches; (E part) brown (10YR 5/3) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; (Bt part) 10 percent dark yellowish brown (10YR 4/4) and dark brown (7.5YR 4/4) sticky very fine sandy loam with clay bridges; few medium roots; moderately acid; clear wavy boundary.

E/Bt2—26 to 40 inches; (E part) brown (10YR 5/3) and pale brown (10YR 6/3) loamy fine sand; single grain; loose; (Bt part) alternating lamellae, totaling 7

to 8 inches thick, of 1/2-inch thick brown (10YR 4/3) sticky, fine sandy loam to very fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; firm; massive; clay bridges on sand grains; few fine pores; clay films in pores; some dark brown (10YR 4/4) sticky, fine sandy loam to very fine sandy loam as circular bodies; moderately acid; clear smooth boundary.

C—40 to 60 inches; light yellowish brown (10YR 6/4) and pale brown (10YR 6/3) fine sand; common medium distinct strong brown (7.5YR 5/6) mottles; moderately acid. Grades to stratified fine sand with depth.

The solum ranges from 40 to 60 inches in thickness. Most pedons do not have coarse fragments, but in some pedons they range to 3 percent, by volume. Depth to carbonates is below a depth of 48 inches. Depth to lamallae is 26 to 30 inches. Reaction ranges from strongly acid to neutral in the A horizon, moderately acid to neutral in the B and E/Bt horizons, and moderately acid to mildly alkaline in the C horizon.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture is very fine sandy loam or fine sandy loam.

The B horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 3 to 6. Its texture is very fine sandy loam to fine sand. Its consistence is friable or very friable.

The E/Bt horizon (E part) has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3. Its texture is fine sand, or loamy very fine sand to fine sandy loam. The lamellae (Bt part) are 7 to 8 inches thick within sandier and lighter colored material. The lamellae have hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 3 or 4. Their texture is fine sandy loam to very fine sandy loam. Their structure is subangular blocky, or they are massive.

The C horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Its texture is fine sand or very fine sand, and generally the horizon is stratified.

Galoo Series

The Galoo series consists of very shallow, excessively drained and somewhat excessively drained soils that formed in a thin layer of glacial till overlying limestone or calcareous sandstone bedrock. These soils are on glacial till plains underlain by bedrock. Slope ranges from 0 to 8 percent.

Galoo soils are commonly near shallow, somewhat excessively drained and excessively drained Benson soils, well drained and somewhat excessively drained Farmington soils, moderately deep, well drained, and moderately well drained Galway soils, and somewhat poorly drained and poorly drained Newstead soils. Galoo soils are similar to but are not as gravelly as and are shallower than Benson and Galway soils. They are not as wet as and are shallower than Newstead soils, and are shallower than Farmington soils.

Typical pedon of Galoo silt loam, in an area of Galoo-Rock outcrop complex, 0 to 8 percent slopes, in the town of Henderson, 1,320 feet north of the intersection of County Route 72 and New York Route 3, and 50 feet east of New York Route 3:

A1—0 to 4 inches; dark brown (7.5YR 3/2) silt loam; weak fine and very fine granular structure; very friable; many fine roots; 7 percent coarse fragments; neutral; abrupt smooth boundary.

Bw—4 to 7 inches; reddish brown (5YR 4/3) channery silt loam; brown (7.5YR 4/4) rubbed; moderate fine and very fine subangular blocky structure, parting to moderate fine and very fine granular; friable; many fine roots; few fine pores; 15 percent coarse fragments; neutral; abrupt smooth boundary.

2R—7 inches; gray limestone bedrock.

The thickness of the solum and depth to bedrock range from 2 to 10 inches. Coarse fragments, dominantly limestone and partly calcareous sandstone, range from 3 to 15 percent, by volume, in the surface layer and from 3 to 20 percent in the subsoil. Reaction ranges from very strongly acid to mildly alkaline throughout.

The Ap, or A, horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 1 to 3. Its texture is silt loam to fine sandy loam.

The B horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 6. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction. Some pedons have a few fine faint high chroma mottles. Structure of the horizon is weak or moderate fine or very fine granular or subangular blocky. Its consistence is friable or very friable.

The 2R horizon is dominantly gray limestone and, in some pedons, thin layers of shale, or it is calcareous sandstone.

Some of the map units (GuB and HpB) are taxadjuncts to the Gallo series because reaction is very strongly acid in the surface layer and the subsoil. This difference, however, does not significantly affect use and management of the soils.

Galway Series

The Galway series consist of moderately deep, well drained and moderately well drained soils that formed in glacial till over limestone bedrock. Slope ranges from 0 to 15 percent.

Galway soils are commonly near shallow, well drained and somewhat excessively drained Farmington soils and moderately deep, somewhat poorly drained and very poorly drained Newstead soils on uplands. They are also near well drained Nellis, Lowville, and Madrid soils.

Galway soils are more gravelly than Farmington soils, and not as deep as Nellis, Lowville, and Madrid soils.

Typical pedon of Galway silt loam, 3 to 8 percent slopes, in the town of Rodman, 660 feet west of the intersection of Caird Road and County Route 155, and 130 feet northeast of Caird Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium subangular blocky structure parting to moderate medium and fine granular; friable; many fine and few medium roots; 8 percent coarse fragments, 1 percent more than 3 inches long; neutral; clear smooth boundary.

Bw—9 to 14 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine and medium tubular pores; 30 percent macro pores filled with very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) material; 15 percent coarse fragments, 2 percent more than 3 inches long; neutral; clear irregular boundary.

BC—14 to 23 inches; dark grayish brown (10YR 4/2) and brown (10YR 4/3) gravelly loam; common fine faint light olive brown (2.5Y 5/4) and few fine faint yellowish brown (10YR 5/6) mottles in the lower part of the horizon; weak fine subangular blocky structure; firm; few fine roots; few medium and few fine tubular pores; few macro pores lined with very dark grayish brown (10YR 3/2) material; 30 percent coarse fragments, 3 percent more than 3 inches long; weak effervescence; mildly alkaline; gradual wavy boundary.

C—23 to 26 inches; brown (10YR 4/3) and grayish brown (10YR 5/2) very gravelly loam; few fine faint yellowish brown (10YR 5/4 and 5/6) mottles; massive; firm; 45 percent coarse fragments, 5 percent more than 3 inches long; strong effervescence; moderately alkaline; abrupt smooth boundary.

R—26 inches; gray (10YR 5/1) limestone.

The solum ranges from 18 to 30 inches in thickness. Depth to carbonates ranges from 14 to 40 inches. Depth to bedrock is 20 to 40 inches. Coarse fragments range from 0 to 35 percent, by volume, in the solum and from 10 to 70 percent in the substratum. Reaction ranges from moderately acid to neutral in the surface layer, from moderately acid to mildly alkaline in the subsoil, and from mildly alkaline to moderately alkaline in the substratum. Generally, the solum is not mottled, but a few pedons have faint mottles of high chroma in the lower part of the B horizon and in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction.

The B horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 3 to 6. Its texture is silt loam to fine sandy loam, and silt content decreases with depth. Its structure is weak or moderate, medium or coarse blocky.

The C horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4. Its texture is sandy loam to silt loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is friable or firm. Most pedons have calcium carbonates, but a few pedons have magnesium carbonates.

Granby Series

The Granby series consists of very deep, poorly drained and very poorly drained soils that formed in sandy, glacial outwash deposits on depressional plains and near drainageways. Slope ranges from 0 to 3 percent.

Granby soils are commonly near poorly drained and somewhat poorly drained Junius soils and moderately well drained Deerfield soils. Granby soils are similar to Junius soils. They are less acid than Deerfield soils. Granby soils are near excessively drained Groton soils on terraces, lake beaches, offshore bars, and beach ridges. They do not have the gravel content of and are more poorly drained than Groton soils.

Typical pedon of Granby mucky loamy fine sand, in the town of Henderson, 0.75 mile southwest of the intersection of County Routes 75 and 71, and 132 feet north of County Route 71:

A—0 to 10 inches; very dark gray (10YR 3/1) mucky loamy fine sand, gray (10YR 5/1) dry; weak fine granular structure; many fine and few medium roots; very friable; moderately acid; clear smooth boundary.

Bg1—10 to 18 inches; gray (10YR 5/1) loamy fine sand; common medium distinct light gray (10YR 7/1 and 7/2) and brown (10YR 5/3) mottles; weak fine granular structure; few fine roots; very friable; slightly acid; clear wavy boundary.

Bg2—18 to 32 inches; dark grayish brown (10YR 4/2) loamy fine sand; common medium distinct yellowish brown (10YR 5/6) mottles; single grain; loose; few medium roots; common medium dark reddish brown (5YR 3/3 and 2/2) stainings; slightly acid; gradual wavy boundary.

Bg3—32 to 38 inches; grayish brown (10YR 5/2) loamy fine sand; common medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; single grain; loose; few pebble-sized light gray (10YR 7/2) lime concretions; neutral; clear wavy boundary.

Cg—38 to 60 inches; grayish brown (2.5Y 5/2) sand; common medium distinct yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) mottles; single grain; loose; 10 percent pebbles; neutral; weak effervescence below a depth of 48 inches.

The solum ranges from 24 to 38 inches in thickness. Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and slightly acid to moderately alkaline in the substratum.

The Ap, or A, horizon is neutral or has hue of 10YR to 5Y, value of 2 or 3, and chroma of 0 to 2. It has dry color value of less than 5.5. Texture of the horizon is commonly mucky loamy fine sand, but ranges from loamy sand to fine sandy loam. Some pedons have a thin organic layer above the A horizon.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 1. Mottles range from few to many, fine and medium, and have chroma of 2 to 6. Texture of the horizon is loamy fine sand, fine sand, or sand that commonly has thin layers of sandy loam. Its structure is granular, or the horizon is single grain.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 1. Its texture is fine sand or sand.

Groton Series

The Groton series consists of very deep, excessively drained soils that formed in stratified sand and gravel glacial outwash on terraces and remnant lake beaches. Slope ranges from 0 to 35 percent.

Groton soils are commonly near excessively drained Windsor soils, poorly drained and somewhat poorly drained Junius soils, and poorly drained and very poorly drained Granby soils. They are near moderately well drained Phelps soils on terraces and alluvial fans. Groton soils are more gravelly in the subsoil than Windsor soils. They are more gravelly than Junius and Granby soils. Groton soils are more gravelly in the subsoil than Phelps soils.

Typical pedon of Groton gravelly loam, 3 to 8 percent slopes, in the town of Adams, 1.4 miles north of Adams Center, and 1,300 feet east of U.S. Route 11:

Ap—0 to 8 inches; dark brown (10YR 3/3) gravelly loam; moderate medium granular structure; friable; common fine roots; 15 percent gravel, 5 percent cobbles; neutral; clear wavy boundary.

Bw1—8 to 14 inches; brown (7.5YR 5/4) gravelly sandy loam; moderate medium subangular blocky structure; friable; common fine roots; 15 percent gravel, 5 percent cobbles; neutral; clear wavy boundary.

Bw2—14 to 17 inches; brown (7.5YR 4/4) gravelly sandy loam; moderate medium subangular blocky structure; friable; common fine roots; 15 percent gravel, 5 percent cobbles; neutral; clear wavy boundary.

Bw3—17 to 19 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; moderate coarse to medium subangular blocky structure; friable; common fine roots; 25 percent gravel, 5 percent cobbles; neutral; gradual wavy boundary.

2C1—19 to 39 inches; brown (10YR 5/3) very gravelly sand; single grain; loose; common fine roots; 60 percent gravel, less than 10 percent cobbles; pockets of light gray (10YR 7/2) and black (10YR 2/1) sand; weakly effervescence; mildly alkaline; abrupt smooth boundary.

2C2—39 to 90 inches; pale brown (10YR 6/3); light gray (10YR 7/2) and very dark gray (N 3/0) stratified sand and fine gravel; single grain; loose; few medium and large roots; 45 percent gravel, cobbles increasing to 20 percent below a depth of 62 inches; weak effervescence; mildly alkaline.

The solum ranges from 10 to 26 inches in thickness. Depth to carbonates ranges from 10 to 40 inches. Depth to bedrock is more than 60 inches. Rock fragments range from 15 to 35 percent, by volume, in the solum and from 25 to 70 percent in the substratum. Reaction ranges from moderately acid to neutral in the surface layer, from moderately acid to mildly alkaline in the subsoil, and from neutral to mildly alkaline in the substratum.

The Ap, or A, horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3. In some pedons a thin organic layer overlies the surface layer. Texture of the horizon is loam, sandy loam, or fine sandy loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 or 4. Its texture is sandy loam to loamy sand in the fine earth fraction.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 2 to 6. It is stratified, gravelly or very gravelly loamy sand or sand.

Groton Variant

The Groton Variant consists of moderately deep, excessively drained soils that formed in stratified, outwash deposits of sand and gravel on terraces and beach ridges. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 0 to 8 percent.

Groton Variant soils are commonly near deep, moderately well drained Phelps soils on terraces. These soils are more gravelly in the subsoil than Phelps soils. Groton Variant soils are near moderately deep, well drained and moderately well drained Galway soils and very shallow, excessively drained and somewhat excessively drained Galoo soils. Groton Variant soils are higher in sand and gravel content than Galway and Galoo soils.

Typical pedon of Groton Variant gravelly loam, 0 to 8 percent slopes, in the town of Lyme, 3,000 feet northeast of County Route 57 on State Park Road, 300 feet northwest of road:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, light brownish gray (10YR 6/2) dry; moderate medium and fine granular structure; friable; many fine roots; 20 percent coarse fragments; mildly alkaline; abrupt wavy boundary.

Bw—7 to 11 inches; reddish brown (5YR 4/3) gravelly sandy loam; weak medium subangular blocky structure; friable; common roots; common pores; 30 percent coarse fragments; mildly alkaline; clear wavy boundary.

BC—11 to 13 inches; dark reddish brown (5YR 3/4) very gravelly sandy loam; weak medium and fine subangular blocky structure; friable; common roots; common pores; 40 percent coarse fragments; weak effervescence; moderately alkaline; clear broken boundary.

2C—13 to 39 inches; pale brown (10YR 6/3) very gravelly sand; single grain; loose; 50 percent coarse fragments; strong effervescence; moderately alkaline.

R—39 inches; hard gray limestone bedrock overlain by as much as 1/8 inch of dark grayish brown (10YR 4/2) precipitated clayey material.

The solum ranges from 13 to 18 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Coarse fragments range from 15 to 40 percent, by volume, in the solum and from 35 to 65 percent in the substratum. Depth to carbonates ranges from 6 to 40 inches. Reaction ranges from neutral to moderately alkaline throughout.

The Ap, or A, horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3. Its texture is loam, sandy loam, or silt loam in the fine earth fraction.

The B horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. Its texture is sandy loam to loam in the fine earth fraction. Its structure is weak or moderate, medium or fine granular or weak or moderate, medium or fine subangular blocky. Its consistency is friable or very friable.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 or 3. Its texture is very gravelly loamy sand, very gravelly sand, or stratified gravel and sand.

Guffin Series

The Guffin series consists of moderately deep, poorly drained and very poorly drained soils that formed in calcareous, lacustrine and estuarine sediments on lake plains. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 0 to 3 percent.

Guffin soils are similar to and commonly near moderately deep, somewhat poorly drained Chaumont soils and moderately well drained Wilpoint soils.

Typical pedon of Guffin clay, in the town of Lyme, 4,224 feet south of the intersection of New York Route 12E and Moffet Road, 55 feet southeast of Moffet Road:

Ap—0 to 7 inches; very dark gray (10YR 3/1) clay; dark grayish brown (10YR 4/2) dry; strong fine and medium granular structure in upper part, strong fine blocky in lower part; friable; common fine roots; few very fine black concretions; slightly acid; abrupt smooth boundary.

Bt1—7 to 13 inches; dark grayish brown (10YR 4/2) clay; many (25 percent) fine distinct brown (7.5YR 4/4) mottles; moderate very fine subangular blocky structure; firm; sticky and very plastic; few fine roots; faces of peds are gray (10YR 5/1); neutral; clear wavy boundary.

Bt2—13 to 19 inches; dark grayish brown (10YR 4/2) clay; common fine faint brown (10YR 4/3) mottles; moderate fine subangular blocky structure; firm; sticky and very plastic; few fine roots; faces of peds are dark gray (10YR 4/1); neutral; clear wavy boundary.

BCt—19 to 22 inches; grayish brown (2.5Y 5/2), dark grayish brown (2.5Y 4/2), and brown (10YR 4/3) clay in horizontal streaks; common fine distinct yellowish brown (10YR 5/6) mottles; moderate thin platy structure; firm; sticky and very plastic; few fine roots; faces of peds are dark gray (10YR 4/1); about 2 percent soft grayish brown (2.5Y 5/2) lime concretions; weak effervescence; moderately alkaline; abrupt smooth boundary.

2R—22 inches; massive, level-bedded, limestone bedrock.

The thickness of the solum and depth to bedrock range from 20 to 40 inches. Most pedons do not have coarse fragments, but in some pedons pebbles, cobblestones, and stones make up as much as 5 percent of the volume. Reaction ranges from moderately acid to neutral in the A horizon and from slightly acid to moderately alkaline in the B horizon. In some pedons free carbonates are in the lower part.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2.

The B horizon has hue of 10YR to 5Y, value of 2 to 5, and chroma of 1 or 2. Its structure is moderate or strong, very fine to coarse angular to subangular blocky or prismatic. Its consistence is friable or firm, sticky or very sticky, and plastic or very plastic.

Some pedons have a thin, gray 2C horizon just above the bedrock.

The 2R horizon is dominantly limestone bedrock, and in places, partly shale and sandstone.

Gulf Series

The Gulf series consists of very deep, poorly drained and very poorly drained soils that formed in glacial outwash deposits on terraces and kames. These soils are in nearly level areas and depressions. Slope ranges from 0 to 3 percent.

Gulf soils are similar to and commonly near well drained and moderately well drained Haights soils.

Typical pedon of Gulf silt loam, in the town of Rodman, 660 feet south of Williams Road and 1 mile east of New York Route 177:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

Bg1—7 to 12 inches; grayish brown (10YR 5/2) silt loam; common medium faint yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure; firm; few fine and medium roots; common medium pores; 5 percent coarse fragments; strongly acid; clear smooth boundary.

Bg2—12 to 26 inches, pale brown (10YR 6/3) clay loam; common medium distinct strong brown (7.5YR 5/6), few medium faint yellowish brown (10YR 5/6), and common medium faint gray (10YR 6/1) mottles; moderate medium prismatic structure; firm; gray (10YR 6/1) faces of peds; few fine and medium roots; common medium pores; 10 percent coarse fragments; moderately acid; clear smooth boundary.

2Cg1—26 to 40 inches; dark grayish brown (10YR 4/2) gravelly loam; common medium distinct brown (7.5YR 4/4) mottles; massive; friable; 15 percent coarse fragments; moderately acid; clear smooth boundary.

2Cg2—40 to 60 inches; grayish brown (10YR 5/2) gravelly loam; few medium faint yellowish brown (10YR 5/6) mottles; 20 percent coarse fragments; slightly acid.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Coarse fragments range from 0 to 20 percent, by volume, in horizons above a depth of 20 inches and from 5 to 35 percent in horizons below a depth of 20 inches. Reaction ranges from strongly acid to neutral in the surface layer and from strongly acid to mildly alkaline in the subsoil and the substratum.

The Ap horizon is neutral or has hue of 10YR or 2.5Y, value of 3 or 2, or 5 or 4 (dry), and chroma of 0 to 2. Its texture ranges from very fine sandy loam to silty clay loam.

Some pedons have O2 and A1 horizons.

The Bg1 horizon has hue of 7.5YR to 5Y, value of 4 or 6, and chroma of 1 or 2. Its texture ranges from loam to silty clay loam in the fine earth fraction. Its clay content ranges from 18 to 35 percent. Its structure is prismatic or blocky, or the horizon is massive. Its consistence is friable or firm.

The Bg2 horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 3 or 4. Its texture ranges from loam to silty clay loam or their gravelly analog. Some pedons have thin layers of contrasting material. Structure and consistence of the horizon are similar to those of the Bg1 horizon.

The 2C horizon consists of layers of gravel intermingled with loamy deposits. Its hue is 7.5YR to 5Y, value of 4 or 5, and chroma of 1 to 3.

Haights Series

The Haights series consists of very deep, well drained and moderately well drained soils that formed in old alluvial deposits on outwash terraces and alluvial fans. Slope ranges from 2 to 15 percent.

Haights soils are commonly near well drained Lagross soils in similar terrace and fan positions and poorly drained and very poorly drained Gulf soils in wetter terrace and fan positions. Also, Haights soils are near well drained Bice soils on hills and ridges. Haights soils are similar to Lagross and Gulf soils, but are not as gravelly in the solum as Lagross soils. Unlike Haights soils, Bice soils formed in glacial till deposits.

Typical pedon of Haights silt loam, in an area of Haights-Gulf silt loams, undulating, in the town of Worth, 1.1 miles north of the intersection of County Route 03 and O'Connor Road, 50 feet west of county route:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium granular structure; friable; many fine fibrous roots; 10 percent coarse fragments; moderately acid; abrupt smooth boundary.

Bw1—6 to 17 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine and few medium pores; 10 percent coarse fragments; moderately acid; clear smooth boundary.

Bw2—17 to 27 inches; dark yellowish brown (10YR 4/4) shaly silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine and few medium pores; 15 percent coarse fragments; moderately acid; abrupt wavy boundary.

Bw3—27 to 34 inches; brown (10YR 5/3) shaly loam; common medium distinct strong brown (7.5YR 5/6) and few fine faint grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; few fine roots in top 10 inches; 30 percent coarse fragments; strongly acid; clear wavy boundary.

C—34 to 60 inches; grayish brown (2.5Y 5/2) shaly loam; few fine faint yellowish brown (10YR 5/6) mottles; weak thick platy structure; friable; thin lenses of gravelly sand and small pockets of sand; 30 percent coarse fragments; strongly acid.

The solum ranges from 20 to 40 inches in thickness. Pebbles and cobblestones range from none to 35 percent, by volume, throughout. Dark shale fragments range from 0 to 15 percent, by volume, in the surface

layer, from a few to 35 percent in the upper part of the B horizon, and from 20 to 60 percent in the lower part of the B horizon and in the C horizon. The weighted average of total coarse fragment content in the subsoil is less than 35 percent. Reaction ranges from moderately acid to extremely acid in the A and B horizons and from strongly acid to slightly acid in the C horizon. Some pedons are neutral at a depth of 48 inches or more.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. Its texture in the fine earth fraction is silt loam or loam. Its structure is weak or moderate, medium or fine granular. Its consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. Some pedons have high and low chroma mottles below a depth of 24 inches. Texture in the fine earth fraction is silt loam, loam, or fine sandy loam. Structure is weak or moderate, very fine or medium subangular blocky. Consistence is friable or very friable.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is loam, silt loam, or fine sandy loam that has thin lenses of gravelly sand and pockets of fine sand in the lower part. The horizon is massive, or its structure is weak or moderate, medium or thick platy. Its consistence is friable to loose.

Halsey Series

The Halsey series consists of very deep, very poorly drained soils that formed in loamy deposits which overlie sand and gravel. These soils are in depressions on outwash plains, remnant beaches, and terraces. Slope ranges from 0 to 3 percent.

Halsey soils are commonly near excessively drained Groton soils and moderately well drained Phelps soils. Unlike Groton soils, Halsey soils do not have a gravelly and sandy subsoil.

Typical pedon of Halsey mucky loam, in the town of Adams, northeast of the village of Adams Center, 3,000 feet north of New York Route 177 and U.S. Route 11, 1,800 feet east of U.S. Route 11:

Oi—2 inches to 0; decomposing leaf litter that is less than 20 percent, by volume, mineral material; many very fine, incorporated matted roots.

A—0 to 8 inches; black (10YR 2/1) mucky loam; very weak fine subangular blocky structure parting to weak fine granular; very friable; common fine roots; common very dark gray (5YR 3/1) root stains in old channels; neutral; clear smooth boundary.

E—8 to 11 inches; dark grayish brown (10YR 4/2) loam; pale brown (10YR 6/3) dry; distinct grayish brown (2.5Y 5/2) and light brownish gray (2.5Y 6/2) mottles; very weak subangular blocky structure parting to weak fine granular; friable; common fine roots; neutral; clear smooth boundary.

Bg1—11 to 16 inches; grayish brown (2.5Y 5/2) loam; common fine faint light olive brown (2.5Y 5/4) and few fine dark yellowish brown (10YR 4/4) mottles; very weak medium subangular blocky structure parting to weak fine granular; friable; few fine roots; 2 percent coarse fragments; neutral; clear smooth boundary.

Bg2—16 to 22 inches; dark gray (5Y 4/1) and olive gray (5Y 4/2) loam; common medium distinct light olive brown (2.5Y 5/4) mottles; weak fine granular structure; friable; few fine roots; 3 percent coarse fragments; neutral; clear wavy boundary.

BCg—22 to 30 inches; olive gray (5Y 4/2 and 5/2) sandy loam; common medium distinct light olive brown (2.5Y 5/4) mottles; weak fine granular structure; friable; 5 percent coarse fragments; neutral; clear wavy boundary.

2Cg—30 to 60 inches; dark gray (5Y 4/1) and olive gray (5Y 4/2) gravelly sand; common medium distinct light olive brown (2.5Y 5/4) mottles; single grain; loose; stratified sand and gravel with depth; 35 percent coarse fragments, 5 percent more than 3 inches in diameter; weak effervescence; mildly alkaline; moderately alkaline below a depth of 40 inches.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Coarse fragments make up from 0 to 35 percent, by volume, of the subsoil and from 10 to 60 percent of the substratum. Reaction ranges from moderately acid to neutral in the A and B horizons and from slightly acid to moderately alkaline in the C horizon.

The A horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is fine sandy loam to silt loam and their mucky analog.

The B horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 2. It is mottled. Its texture in the fine earth fraction is fine sandy loam to silt loam, except that in the BC horizon texture is sandy loam to loamy fine sand. Structure is subangular blocky or granular.

The C horizon is neutral or has hue of 10YR to 5Y, value of 3 to 6, and chroma of 0 to 4. Its texture is sandy loam to stratified sand and gravel.

In this survey area these soils are taxadjuncts to the Halsey series because the sandy loam texture in the lower part of the subsoil is not within the range of the Halsey series. This difference does not affect use and management of the soils.

Hamlin Series

The Hamlin series consists of very deep, well drained soils that formed in alluvium in the higher positions of flood plains adjacent to streams. Slope ranges from 0 to 3 percent.

Hamlin soils are similar to and commonly near moderately well drained and somewhat poorly drained Teel soils and poorly drained and very poorly drained Wayland soils on flood plains. They are near well drained Blasdell soils on alluvial fans and stream terraces. They are not as gravelly in the subsoil as Blasdell soils.

Typical pedon of Hamlin silt loam, in the town of Adams, 1 mile south of junction of Minkler and Fuller Roads and 800 feet east of Fuller Road, near Sandy Creek, North Branch:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium granular structure; friable; many fine roots and few medium roots; slightly acid; abrupt smooth boundary.

Bw1—10 to 18 inches; brown (10YR 5/3) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; neutral; gradual smooth boundary.

Bw2—18 to 32 inches; brown (10YR 5/3) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; neutral; clear wavy boundary.

C1—32 to 54 inches; dark grayish brown (10YR 4/2) silt loam; few fine faint yellowish brown (10YR 5/6) and few medium gray (10YR 5/1) mottles; moderate fine platy structure; friable; common fine roots; common fine pores; neutral; gradual wavy boundary.

2C2—54 to 65 inches; gray (10YR 5/1) gravelly silt loam; common coarse distinct brownish yellow (10YR 6/8) and many coarse prominent light olive brown (2.5Y 5/6) mottles; moderate coarse platy structure; firm; few fine roots; few fine pores; 20 percent soft gray shale fragments; neutral.

The solum ranges from 24 to 40 inches in thickness. Depth to carbonates is more than 40 inches. Depth to bedrock is more than 60 inches. Coarse fragments generally make up less than 3 percent of the volume above a depth of 40 inches, but in some pedons they make up as much as 25 percent of the substratum. Reaction ranges from slightly acid to neutral in the A and B horizons and from neutral to mildly alkaline in the C horizon.

The Ap, or A1, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3.

The B horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam or very fine sandy loam. Its structure is weak or moderate, medium or fine subangular blocky or granular. Its consistence is friable or firm.

The C horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 1 to 4. Its texture ranges from silt loam to fine sandy loam in the fine earth fraction. Its structure is weak platy, because of fine stratification, or the horizon is massive. Its consistence is friable or firm.

Heuvelton Series

The Heuvelton series consists of very deep, moderately well drained soils that formed in lacustrine silt and clay on lake plains. Slope ranges from 3 to 15 percent.

Heuvelton soils are similar to and commonly near somewhat poorly drained Muskellunge soils. They are also near moderately deep, well drained and somewhat excessively drained Millsite soils on bedrock-cored ridges. Millsite soils are moderately deep to bedrock.

Typical pedon of Heuvelton silt loam, 3 to 8 percent slopes, in the town of Antwerp, 1,600 feet northeast of the intersection of County Route 22 and Hull Road, 50 feet north of County Route 22:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine and medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) silt loam; light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; common fine roots; slightly acid; clear smooth boundary.

B/E—12 to 18 inches; (B part) brown (10YR 4/3) silty clay loam; moderate medium and fine subangular blocky structure; firm; sticky and plastic; few fine and medium roots; few fine pores, some with clay linings; (E part) grayish brown (10YR 5/2) silt loam, light brownish gray (10YR 6/2) dry, interfingering and on the faces of some peds; neutral; gradual wavy boundary.

Bt1—18 to 26 inches; brown (10YR 4/3) silty clay; common fine faint yellowish (10YR 5/4) and grayish brown (10YR 5/2) mottles; moderate coarse prismatic structure parting to moderate and fine subangular blocky; firm; sticky and plastic; few fine roots along faces of prisms; few to common pores with clay linings; thin clay films on faces of peds; neutral; clear smooth boundary.

Bt2—26 to 35 inches; dark yellowish brown (10YR 4/4) silty clay; many (40 percent) fine and medium faint brown (7.5YR 5/2) and yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium and fine angular blocky; firm; sticky and plastic; few fine roots along faces of prisms; few to common pores with clay linings; thick clay films on faces of peds; neutral; clear wavy boundary.

C—35 to 60 inches; brown (7.5YR 5/2 and 5/4) silty clay varved with silt and very fine sand; massive; firm; common medium faint strong brown (7.5YR 5/8) and common medium distinct grayish brown (2.5Y 5/2) mottles; about 8 percent light gray (10YR 7/2) fine lime material; about 3 percent dark reddish brown (5YR 3/3) fine iron oxide; pale brown (10YR 6/3) and grayish brown (10YR 5/2) silt and very fine

sand coating some rock structure faces; weak effervescence; mildly alkaline.

The thickness of the solum and depth to carbonates range from 24 to 40 inches. Depth to bedrock is more than 60 inches. Rock fragments range from 0 to 10 percent. Reaction ranges from strongly acid to neutral in the A horizon, moderately acid to mildly alkaline in the B horizon, and neutral to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Its texture is silt loam or silty clay loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 2. Its texture is silt loam or silty clay loam. Its structure is weak or moderate, subangular blocky or platy. Its consistence is friable or firm.

The B/E horizon has characteristics like those of the B and E horizons.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is silty clay loam to clay, and it averages 35 to 60 percent clay. Its structure is prismatic or blocky, and the dominant secondary structure is subangular or angular blocky. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is silty clay loam to clay varved with silt and very fine sand.

Hinckley Series

The Hinckley series consists of very deep, excessively drained soils that formed in glacial outwash deposits of sand, gravel, and cobblestones derived mainly from granite, gneiss, and schist. These soils are on terraces, outwash plains, deltas, and kames. Slope ranges from 0 to 35 percent.

Hinckley soils are commonly near somewhat excessively drained Hoosic soils on similar landscapes. They are not as loamy in the upper part of the subsoil as Hoosic soils. Hinckley soils are also near excessively drained Windsor soils. They contain more gravel in the subsoil than sandy Windsor soils.

Typical pedon of Hinckley gravelly sandy loam, 0 to 8 percent slopes, in the town of Alexandria, 0.5 mile northeast of the cloverleaf interchange of Interstate 81 and New York Route 12, 1,320 feet northwest of New York Route 12 on the east side of Pinehurst Road:

Ap—0 to 6 inches; dark brown (10YR 4/3) gravelly sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent coarse fragments; strongly acid; clear smooth boundary.

Bw1—6 to 12 inches; strong brown (7.5YR 5/6) very gravelly loamy fine sand; single grain; loose; many fine roots; 40 percent coarse fragments; strongly acid; clear smooth boundary.

Bw2—12 to 20 inches; brown (7.5YR 5/4) very gravelly loamy sand; single grain; loose; many fine roots; 45 percent coarse fragments; strongly acid; clear wavy boundary.

C—20 to 60 inches; yellowish brown (10YR 5/4) very gravelly loamy sand; single grain; loose; few fine roots; 50 percent coarse fragments; strongly acid.

The solum ranges from 18 to 30 inches in thickness. Depth to bedrock is more than 60 inches. Gravel and cobble fragments range from 10 to 45 percent, by volume, in the solum and from 35 to 60 percent in the substratum. Reaction ranges from extremely acid to moderately acid in the solum and the substratum.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3. Its texture is sandy loam or loamy fine sand.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Its texture is loamy coarse sand to loamy fine sand in the fine earth fraction. Its structure is weak granular, or the horizon is single grain. Its consistence is very friable or loose.

The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6. Its texture is loamy fine sand to coarse sand in the fine earth fraction and is commonly stratified.

Hollis Series

The Hollis series consists of shallow, well drained and somewhat excessively drained soils that formed in a thin mantle of glacial till derived mainly from Potsdam sandstone, gneiss, granite, and schist and partly from dolomite on upland till plains. Bedrock is at a depth of 10 to 20 inches. Slope ranges from 0 to 8 percent, but is dominantly 0 to 3 percent.

Hollis soils are commonly near moderately deep, well drained and somewhat excessively drained Chatfield soils and very shallow, excessively drained and somewhat excessively drained Galoo, acid, soils on similar landscapes. Hollis soils are associated with moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils on lake plains. They are less clayey and more gravelly than Chaumont and Guffin soils.

Typical pedon of Hollis fine sandy loam, in an area of Hollis-Rock outcrop complex, 0 to 8 percent slopes, in the town of Theresa, about 1,320 feet east of Interstate 81 and 100 feet south of New York Route 411:

Oi—2 inches to 0; partly decomposed forest litter; strongly acid; abrupt wavy boundary.

A—0 to 4 inches; very dark brown (10YR 2/2) fine sandy loam; weak fine granular structure; very friable; common fine fibrous roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

Bw1—4 to 10 inches; brown (7.5YR 5/4) gravelly fine sandy loam; weak fine granular structure; very friable; common fine roots; 15 to 20 percent coarse fragments; strongly acid; clear smooth boundary.
Bw2—10 to 16 inches; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; weak fine granular structure; very friable; common medium roots; 15 to 20 percent coarse fragments; strongly acid.
R—16 inches; Potsdam sandstone and dolomite.

The solum ranges from 10 to 20 inches in thickness. Depth to bedrock is 10 to 20 inches. Coarse fragments range from 2 to 25 percent, by volume. Reaction ranges from very strongly acid to moderately acid.

The Ap, or A, horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3. Its texture is fine sandy loam, loam, or sandy loam. In some pedons a thin O2 horizon overlies the mineral surface layer.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. Its texture is fine sandy loam, loam, and sandy loam. Its structure is granular or blocky, or the horizon is massive. Its consistence is friable or very friable.

The bedrock is dominantly Potsdam sandstone and dolomite.

Hoosic Series

The Hoosic series consists of very deep, somewhat excessively drained soils that formed in stream-deposited sand, gravel, and cobblestones on glacial outwash terraces, outwash plains, deltas, and kames. Slope ranges from 0 to 35 percent.

Hoosic soils are commonly near excessively drained Hinckley soils on similar landscapes. They are more loamy in the upper part of the subsoil than Hinckley soils. Hoosic soils are near excessively drained Windsor soils. They are more gravelly in the subsoil than Windsor soils.

Typical pedon of Hoosic cobbly sandy loam, in an area of Hinckley-Hoosic cobbly sandy loams, 0 to 8 percent slopes; in the town of Alexandria, 0.5 mile north of the intersection of New York Routes 37 and 26B, on the west side of New York Route 37, in a gravel pit:

A—0 to 6 inches; dark brown (10YR 4/3) cobbly sandy loam; moderate medium granular structure; very friable; many fine roots; 25 percent coarse fragments; strongly acid; clear smooth boundary.
E—6 to 8 inches; light brown (7.5YR 6/4) cobbly fine sandy loam; weak fine granular structure; very friable; many fine roots; 25 percent coarse fragments; strongly acid; abrupt smooth boundary.
Bw—8 to 16 inches; strong brown (7.5YR 5/6) very gravelly sandy loam; weak fine granular structure; friable; common fine roots; 40 percent coarse fragments; strongly acid; clear smooth boundary.
C1—16 to 22 inches; yellowish brown (10YR 5/4) very gravelly loamy sand; single grain; loose; few fine roots; 50 percent coarse fragments; moderately acid; clear smooth boundary.
2C2—22 to 60 inches; brown (10YR 5/3) stratified very gravelly sand; single grain; loose; 60 percent coarse fragments; moderately acid.

The solum ranges from 16 to 36 inches in thickness. Depth to bedrock is more than 60 inches. Gravel and cobblestones range from 25 to 50 percent, by volume, in the solum and from 40 to 65 percent in the substratum. Reaction is very strongly acid or strongly acid in the A and B horizons and very strongly acid to moderately acid in the C horizon.

The A, or Ap, horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is fine sandy loam or sandy loam in the fine earth fraction.

The E horizon has hue of 7.5YR or 10YR, value of 6, and chroma of 2 to 4. Its texture is fine sandy loam or sandy loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. Its texture is loam or sandy loam in the fine earth fraction. Its structure is weak granular or blocky. Some pedons, below a depth of 22 inches, have a BC horizon of loamy fine sand.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is loamy sand or sand in the fine earth fraction.

Hudson Series

The Hudson series consists of very deep, moderately well drained soils that formed in lacustrine silt and clay on lake plains. Slope ranges from 3 to 35 percent.

Hudson soils are similar to and commonly near somewhat poorly drained Rhinebeck soils and poorly drained and very poorly drained Madalin soils on lake plains.

Typical pedon of Hudson silt loam, 3 to 8 percent slopes, in the town of Hounsfield, 1,200 feet northwest of Maxon Corners and 99 feet southwest of Spencer Road:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak medium and fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.
E—8 to 12 inches; brown (10YR 5/3) silt loam, pale brown (10YR 6/3) dry; common (less than 20 percent) fine and medium faint yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6, 5/8) mottles; moderate medium and fine subangular blocky structure; friable; common fine and very fine roots; few fine discontinuous tubular pores; few circular or discontinuous bodies of B-horizon-like

material in the lower part; less than 10 percent; strongly acid; clear smooth boundary.

B/E—12 to 16 inches; (B part) brown to dark brown (7.5YR 4/4) silty clay loam; common fine distinct strong brown (7.5YR 5/6 and 5/8) and few medium and fine distinct grayish brown (10YR 5/2) mottles; moderate medium and fine subangular blocky structure parting to weak thin platy; firm; sticky and plastic; few fine roots; few fine tubular pores partly lined with clay; (E part) brown (10YR 5/3) and pale brown (10YR 6/3) silt interfingering; moderately acid; gradual wavy boundary.

Bt1—16 to 47 inches; brown (7.5YR 5/4) silty clay; many common distinct strong brown (7.5YR 5/6) and few fine distinct grayish brown (10YR 5/2) mottles; moderate coarse prisms parting to moderate fine subangular blocky structure; firm; sticky and plastic; few fine roots; few to common pores lined with clay; thick clay films on surface of peds; less than 10 percent light brownish gray (10YR 6/2) A2 horizon material on some peds in the upper part; slightly acid; clear smooth boundary.

Bt2—47 to 59 inches; yellowish brown (10YR 5/4) silt loam; common fine distinct strong brown (7.5YR 5/6 and 5/8) mottles; moderate platy structure parting to weak medium angular blocky; firm; sticky and plastic; few fine roots; very few fine tubular pores; clay films on surface of peds; few iron oxide accumulations on compressional surfaces; neutral; gradual smooth boundary.

C—59 to 70 inches; brown (10YR 4/3) silty clay; common medium distinct yellowish brown (10YR 5/6) and common fine faint yellowish brown (10YR 5/4) mottles; moderate medium and thick platy structure (rock structure); firm; slightly sticky and plastic; some plate faces have grayish brown (10YR 5/2) silt coats and iron oxide; weak effervescence; mildly alkaline.

The solum ranges from 28 to 60 inches in thickness. Depth to bedrock is more than 60 inches. Depth to carbonates ranges from 20 to 70 inches. Most pedons do not have rock fragments, but they make up in some pedons as much as 5 percent of the volume. Reaction ranges from very strongly acid to neutral in the Ap, E, and B/E horizons, moderately acid to mildly alkaline in the Bt horizon, and neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 or 3. Its texture is silt loam or silty clay loam.

The E horizon has hue of 10YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. Its texture ranges from silt loam to silty clay loam. Its structure is weak or moderate, subangular blocky or platy. Its consistence is friable or firm.

The B/E horizon is similar in range in characteristics to the B2t and E horizons. Most pedons have few to many mottles, but some pedons do not have mottles.

The Bt horizon has hue of 7.5 to 2.5Y, value of 3 to 6, and chroma of 2 to 4. It has both low and high chroma mottles. Matrix chroma of 2 is lithochromic and not evidence of an aquic moisture regime. Texture of the horizon is silty clay loam or silty clay, and in some subhorizons it ranges from silt loam to clay. Its primary structure is prismatic, platy, or blocky, and the dominant secondary structure is subangular blocky. Its consistence is friable or firm.

Some pedons have a B3 horizon that is similar to the B2 horizon, except that some pedons have carbonates.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. Its texture is silt loam to clay. The horizon is massive, or its structure is platy because of the varied parent material.

Insula Series

The Insula series consists of shallow, well drained soils that formed in a thin mantle of glacial till derived mainly from Potsdam sandstone, gneiss, granite, and schist and partly from dolomite. These soils are on upland till plains cored with bedrock. Slope ranges from 0 to 8 percent.

Insula soils are commonly near moderately deep, well drained and somewhat excessively drained Millsite soils, better drained than Ruse soils, and not as shallow as Quetico soils. Insula soils are also near very deep, somewhat poorly drained Muskellunge soils on lake plains. They are more loamy and shallower than clayey Muskellunge soils.

Typical pedon of Insula loam, in an area of Insula-Quetico complex, rocky, 0 to 8 percent slopes, in the town of Theresa, 800 feet south of the junction of New York Route 37 and Joyner Road, 200 feet west of New York Route 37:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; common fine roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

Bw—8 to 15 inches; brown (10YR 4/3) gravelly loam; weak fine granular structure; very friable; common fine roots; 25 percent coarse fragments; strongly acid; clear smooth boundary.

2R—15 inches; Potsdam sandstone and dolomite.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Coarse fragments range from 5 to 35 percent, by volume. Reaction ranges from very strongly acid to slightly acid.

The Ap, or A, horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3. Its texture is fine sandy loam, loam, sandy loam, or their gravelly analog. In some

pedons a thin, O2 horizon overlies the mineral surface layer.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 6. Its texture is fine sandy loam, loam, or sandy loam in the fine earth fraction. Its structure is granular or blocky, or the horizon is massive. Its consistence is friable or very friable.

The R horizon is dominantly Potsdam sandstone and dolomite.

Ira Series

The Ira series consists of very deep, moderately well drained soils that formed mostly in gray sandstone glacial till deposits and partly in red sandstone and, to a lesser extent, limestone and shale. These soils are on upland till plains and to a lesser extent recessional moraines. Slope ranges from 3 to 15 percent.

Ira soils are commonly near well drained Sodus soils, somewhat poorly drained Scriba soils, and very poorly drained Sun soils on landscapes similar to those of Ira soils. Ira soils are near somewhat poorly drained and poorly drained Massena soils on upland till plains. They have a fragipan horizon, but Massena soils do not.

Typical pedon of Ira gravelly silt loam, 3 to 8 percent slopes, in the town of Ellisburg, 1,050 feet west of the intersection of Hobbs and Staplin Roads, 100 feet north of Staplin Road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; weak medium granular structure; very friable; many fine roots; 15 percent coarse fragments; very strongly acid; clear smooth boundary.

Bw—8 to 13 inches; yellowish brown (10YR 5/6) gravelly loam; very weak medium subangular blocky structure; friable; common fine roots; 15 percent coarse fragments; strongly acid; clear smooth boundary.

E—13 to 17 inches; pale brown (10YR 6/3) gravelly light loam; common medium distinct brown (7.5YR 4/4) and few medium distinct strong brown (7.5YR 5/6) mottles; weak thick platy structure; firm; few fine roots; common fine pores; 15 percent coarse fragments; strongly acid; abrupt irregular boundary.

Bx1—17 to 32 inches; brown (7.5YR 4/4) gravelly loam; common medium distinct strong brown (7.5YR 5/6 and 5/8) and brown (7.5YR 5/2) mottles; moderate very coarse prismatic structure; very firm; brittle; common fine pores with thin clay linings within prisms; 1/2- to 1-inch wide light gray (10YR 7/1) streaks separate prisms; 20 percent coarse fragments; moderately acid; clear wavy boundary.

Bx2—32 to 41 inches; brown (10YR 5/3) gravelly loam; common medium prominent yellowish red (5YR 5/6) and common fine distinct gray (10YR 6/1) mottles; massive; very firm; brittle; common fine pores with thin clay linings; 25 percent coarse fragments; slightly acid; clear wavy boundary.

C1—41 to 52 inches; grayish brown (10YR 5/2) very gravelly loam; common medium prominent yellowish red (5YR 5/6) mottles; massive; very firm; 40 percent coarse fragments; neutral; clear smooth boundary.

2C2—52 to 62 inches; gray (N 5/0) gravelly loam; common medium distinct olive (5Y 5/3) mottles; massive; very firm; 40 percent coarse fragments; weak effervescence; mildly alkaline.

The solum ranges from 36 to 50 inches in thickness. Depth to carbonates ranges from 36 to 84 inches. Depth to bedrock is generally more than 60 inches. Depth to the fragipan ranges from 17 to 24 inches. Coarse fragments range from 10 to 35 percent, by volume, in the solum, including the fragipan, and from 20 to 60 percent in the substratum. Reaction ranges from very strongly acid to neutral in the upper part of the solum and the fragipan and from slightly acid to mildly alkaline in the C horizon.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Its texture is sandy loam, loam, or fine sandy loam in the fine earth fraction.

The E horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6. Its texture is fine sandy loam, loam, or sandy loam in the fine earth fraction.

The Bx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 to 4. Its texture is fine sandy loam or loam in the fine earth fraction. Its structure is prismatic or platy, or the horizon is massive.

The C horizon has range in color and in texture in the fine earth fraction similar to that of the Bx horizon. It is firm or very firm. Its structure is platy, or the horizon is massive.

Junius Series

The Junius series consists of very deep, poorly drained and somewhat poorly drained soils that formed in stream-deposited or lake-laid materials on outwash plains, lake plains, and near drainageways. Slope ranges from 0 to 8 percent.

Junius soils are commonly near poorly drained and very poorly drained Granby soils on similar landscapes. They are near excessively drained Groton soils on terraces and lake beaches. Unlike Junius soils, Groton soils are high in gravel content in the subsoil.

Typical pedon of Junius loamy fine sand, in the town of Adams, 2,640 feet north of Michael Road and 270 feet west of Conrail:

Ap—0 to 8 inches; very dark gray (10YR 3/1) loamy fine sand, light gray (10YR 6/1) dry; weak medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

E—8 to 13 inches; pale brown (10YR 6/3) loamy fine sand; common medium distinct strong brown (7.5YR 5/6) and grayish brown (10YR 5/2) mottles; weak medium granular structure; friable; few fine roots; neutral; gradual wavy boundary.

Bg1—13 to 19 inches; brown (10YR 5/3) loamy fine sand; common medium faint yellowish brown (10YR 5/6) mottles; weak medium granular structure; very friable; no roots; neutral; gradual wavy boundary.

Bg2—19 to 26 inches; grayish brown (10YR 5/2) fine sand; few medium distinct yellowish brown (10YR 5/4) mottles; single grain; loose; occasional grayish brown (2.5YR 5/2) diagonal streaks about 1-inch wide; common black ferromagnesium minerals; neutral; clear smooth boundary.

Cg—26 to 60 inches; grayish brown (2.5Y 5/2) stratified medium and fine sand; few medium distinct yellowish brown (10YR 5/4) and gray (5Y 5/1) mottles; single grain; loose; many black ferromagnesium minerals; weak effervescence; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates ranges from 20 to 60 inches. Most pedons do not have coarse fragments, but in some pedons gravel is in the substratum. Reaction ranges from moderately acid to neutral in the A horizon, slightly acid to mildly alkaline in the B horizon, and neutral to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 or 2. Dry color value is more than 5.5. Texture of the horizon is fine sand, loamy fine sand, or fine sandy loam. Some pedons have a thin organic layer above the A horizon.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 4. It is mottled. Its texture is loamy fine sand or fine sand. Its structure is granular, or the horizon is single grain.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 1. Its texture is very fine sand, fine sand, sand, or stratified medium and fine sand.

Kingsbury Series

The Kingsbury series consists of very deep, somewhat poorly drained soils that formed in lacustrine or marine deposits that are high in clay content. These soils are on lake plains. Slope ranges from 0 to 6 percent.

Kingsbury soils are commonly near deep, moderately well drained Vergennes soils, poorly drained Covington soils, and very poorly drained Livingston soils on landscapes similar to those of Kingsbury soils. They also are near moderately deep, moderately well drained Wilpoint soils, somewhat poorly drained Chaumont soils, and poorly drained and very poorly drained Guffin soils.

Typical pedon of Kingsbury silty clay, 0 to 2 percent slopes, in the town of Orleans, 4.25 miles northeast of Stone Mills along Carter Street Road, 75 feet east of road:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay; light brownish gray (10YR 6/2) crushed, rubbed, and dry; moderate medium granular structure; friable; many fine fibrous roots; few small pores; neutral; abrupt smooth boundary.

E—7 to 12 inches; grayish brown (10YR 5/2) silty clay with many fine faint yellowish brown (10YR 5/6) mottles across broken peds; grayish brown (10YR 5/2) ped faces; strong medium and fine subangular blocky structure; friable; sticky and plastic; common fine roots; common small pores; slightly acid; gradual wavy boundary.

Btg1—12 to 20 inches; grayish brown (2.5Y 5/2) clay with many fine faint light olive brown (2.5Y 5/4) mottles across broken peds; moderate coarse prisms break to strong medium and fine angular blocky structure; firm; sticky and plastic; few fine roots; common fine pores with clay coating, and thin gray (5YR 5/1) clay skins on ped faces; neutral; clear wavy boundary.

Btg2—20 to 28 inches; olive gray (5Y 5/2) clay with many medium distinct light olive brown (2.5Y 5/4) mottles across broken peds; moderate coarse prisms break to strong fine angular blocky structure; firm; very sticky and very plastic; few fine roots along vertical prism faces; few fine pores with clay coatings; gray (5Y 5/1) clay skins on ped faces; neutral; clear wavy boundary.

Cg—28 to 60 inches; olive gray (5Y 5/2) silty clay; few fine faint olive (5Y 5/4) mottles; massive parting to crude apparent angular blocky or prismatic structure; firm; sticky and plastic; no roots; few segregated bodies of light gray lime concretions; strong effervescence; moderately alkaline.

The solum ranges from 20 to 36 inches in thickness. Depth to carbonates ranges from 20 to 60 inches. Depth to bedrock is more than 60 inches. Most pedons do not have coarse fragments, but in some pedons they make up as much as 3 percent of the volume. Reaction ranges from strongly acid to mildly alkaline in the A and B horizons and is moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. Its texture is silt loam to silty clay.

The E horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4. It is mottled. Its texture is silt loam to silty clay. Some pedons do not have an E horizon.

The B horizon has hue of 20YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its structure is moderate coarse prismatic to fine or very fine angular blocky. Its consistence is firm or very firm.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its texture is silty clay or clay, and is commonly varved. Its structure is crude angular blocky or prismatic, or the horizon is massive.

Lagross Series

The Lagross series consists of very deep, well drained soils that formed in stream deposits dominated by shale fragments. These soils are on alluvial fans and outwash terraces. Slope ranges from 0 to 15 percent.

Lagross soils are similar to and commonly near well drained and moderately well drained Haights soils and poorly drained and very poorly drained Gulf soils. Lagross soils, however, are more gravelly than Haights soils.

Typical pedon of Lagross shaly silt loam, in an area of Lagross-Haights complex, rolling, in the town of Rodman, 100 feet northeast of New York Route 177, and 594 feet southeast of the junction of this route and Williams Road:

Ap—0 to 8 inches; dark brown (10YR 3/3) shaly silt loam; weak medium granular structure; friable; many fine roots; 20 percent coarse fragments; moderately acid; abrupt smooth boundary.

Bw1—8 to 14 inches; brown (7.5YR 4/4) shaly silt loam; weak medium subangular blocky structure; friable; common fine roots; 25 percent coarse fragments; moderately acid; clear smooth boundary.

Bw2—14 to 36 inches; brown (10YR 4/3) very shaly silt loam; weak medium subangular blocky structure; friable; common fine roots; common fine pores; 40 percent coarse fragments; moderately acid; gradual wavy boundary.

C—36 to 60 inches; dark brown (10YR 3/3) very shaly silt loam; massive; friable; strata of fine sand interspersed with small gravel; 50 percent coarse fragments; moderately acid.

The solum ranges from 26 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments are dominantly shale and partly (0 to 10 percent of the volume) eratic pebbles and cobblestones. They range from a total of 15 to 60 percent, by volume, in the A horizon and the upper part of the B horizon and from 35 to 70 percent in the lower part of the B horizon and the C horizon. Reaction is very strongly acid to moderately acid in the A and B horizons and strongly acid to slightly acid in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. Its texture is silt loam or loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 or 4. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction. The horizon is massive. Its consistency is friable or firm.

Lamson Series

The Lamson series consists of very deep, poorly drained and very poorly drained soils that formed in stream- or lake-laid sediments, dominated by very fine sand and fine sand. These soils are on lake plains. Slope ranges from 0 to 3 percent.

Lamson soils are commonly near well drained Arkport soils, moderately well drained Galen soils, and somewhat poorly drained Minoa soils on similar landscapes. Lamson soils are associated with poorly drained and very poorly drained Canandaigua soils but are higher in content of sand than those soils.

Typical pedon of Lamson fine sandy loam, in the town of Adams, 3,000 feet southeast of the junction of U.S. Route 11 and Minkler Road, 800 feet north of Minkler Road:

Oi—3 inches to 0; decomposed woody material.

A—0 to 5 inches; black (10YR 2/1) fine sandy loam; moderate medium granular structure; friable; many fine roots; neutral; abrupt wavy boundary.

Bg1—5 to 13 inches; olive brown (2.5Y 4/4) fine sandy loam; common medium faint light olive brown (2.5Y 5/4) mottles; 30 percent grayish brown (2.5Y 5/2) medium sand; weak medium subangular blocky structure; friable; few fine roots; neutral; abrupt wavy boundary.

Bg2—13 to 24 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; common medium faint light olive brown (2.5Y 5/4 and 5/6) mottles; 30 percent light yellowish brown (2.5Y 6/4) silt loam; massive; friable; neutral; abrupt wavy boundary.

Bg3—24 to 30 inches; dark grayish brown (2.5Y 4/2) loamy very fine sand; common medium distinct yellowish brown (10YR 5/6) mottles; structureless; loose; 30 percent light yellowish brown (2.5Y 6/4) silt loam; massive; friable; mildly alkaline; clear wavy boundary.

Cg—30 to 60 inches; dark gray (5Y 4/1) and gray (5Y 5/1) stratified fine sand, very fine sand, and silt; common medium faint olive (5Y 4/3 and 5/3) mottles; massive; friable; single grain; weak effervescence; mildly alkaline.

The solum ranges from 30 to 50 inches in thickness. Depth to carbonates ranges from 30 to 40 inches. Depth

to bedrock is more than 60 inches. Most pedons do not have coarse fragments, but in some pedons they make up as much as 10 percent of the volume. Reaction ranges from moderately acid to mildly alkaline in the A horizon and from slightly acid to moderately alkaline in the B and C horizons.

The Ap, or A, horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is fine sandy loam, loam, or silt loam. Its consistence is friable or very friable. Some pedons have a mucky surface layer.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. Its texture is dominantly fine sandy loam or very fine sandy loam, but in thin subhorizons the range is silt loam to fine sand. Its structure is weak subangular blocky or platy, or the horizon is massive. Its consistence is friable or very friable.

The C horizon is neutral or has hue of 2.5Y or 5Y, value of 4 to 7, and chroma of 0 to 4. Its texture ranges from fine sand and very fine sand to silt loam. The horizon is single grain or massive.

Livingston Series

The Livingston series consists of very deep, very poorly drained soils that formed in lacustrine or estaurine deposits of clays on lake plains. Slope ranges from 0 to 3 percent.

Livingston soils are similar to and commonly near deep, moderately well drained Vergennes soils, somewhat poorly drained Kingsbury soils, and poorly drained Covington soils. They are also near moderately deep, moderately well drained and very poorly drained Guffin soils.

Typical pedon of Livingston mucky silty clay, in the town of Cape Vincent, 1.3 miles northeast of the junction of New York Route 12E and Favret Road, 1,600 feet southeast of Favret Road:

Ap—0 to 6 inches; black (N 2/0) rubbed; mucky silty clay, gray (5Y 5/1) dry; strong fine subangular blocky structure; firm; sticky and plastic; many fibrous roots; slightly acid; clear wavy boundary.

Bg1—6 to 16 inches; dark greenish gray (5GY 4/1) clay; common fine faint dark yellowish brown (10YR 4/4) and olive brown (2.5Y 4/4) mottles; strong coarse prismatic structure that breaks to fine angular blocky; very firm; very plastic and very sticky; few large roots along prism faces; neutral; clear wavy boundary.

Bg2—16 to 30 inches; dark gray (5Y 4/1) clay; common medium distinct olive brown (2.5Y 4/4) mottles; strong coarse prismatic structure that breaks to strong very fine angular blocky; very firm; very plastic and very sticky; few large roots along prism faces; neutral.

C1—30 to 47 inches; dark gray (5Y 4/1) clay; few fine faint olive brown (2.5Y 4/4) mottles; massive; firm; plastic and sticky; thin lenses of light gray (5Y 7/1 and 7/2) and olive gray (5Y 5/2) segregated lime material; weak effervescence; mildly alkaline; clear wavy boundary.

C2—47 to 60 inches; gray (5Y 5/1) silty clay; few fine faint olive brown (2.5Y 4/4) mottles; massive; firm; plastic and sticky; strong effervescence; moderately alkaline.

The solum ranges from 30 to 48 inches in thickness. Depth to carbonates ranges from 30 to 40 inches. Depth to bedrock is more than 60 inches. Most pedons do not have coarse fragments, but in some pedons they make up as much as 2 percent of the volume. Reaction ranges from strongly acid to neutral in the A and B horizons and is mildly alkaline or moderately alkaline in the C horizon.

The Ap, or A, horizon is neutral (N) or has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 0. Its texture is silty clay, clay, or silty clay loam.

The B horizon is neutral (N) or has hue of 5Y to 10YR, value of 4 or 5, and chroma of 0 to 2. Mottles are faint to prominent and have chroma of 4 or more. Structure of the horizon is moderate or strong, medium or coarse prismatic or very weak to strong, very fine to medium angular or subangular blocky. Consistence is firm or very firm, sticky or very sticky, plastic or very plastic.

The C horizon is neutral (N) or has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 0 to 2. Its texture is clay or silty clay. Its structure is moderate or strong, fine or medium angular or subangular blocky, or the horizon is massive. Its consistence is the same as that of the B horizon.

Lowville Series

The Lowville series consists of very deep, well drained soils that formed in a silty mantle that overlies glacial till. These soils are on upland glacial till plains. Slope ranges from 0 to 25 percent.

Lowville soils are commonly near very deep, well drained Nellis soils and moderately well drained Amenia soils, and moderately deep, well drained and moderately well drained Galway soils. Lowville soils are also near very deep, well drained Madrid soils and moderately well drained Bombay soils. Lowville soils are less gravelly in the upper part of the subsoil than Nellis and Amenia soils. They are less gravelly than Galway soils. They have less clay in the subsoil than and less gravel than Madrid and Bombay soils.

Typical pedon of Lowville silt loam, 3 to 8 percent slopes, in the town of Champion, 4,800 feet northwest of Champion Hill Road, 100 feet south of Lamb Road:

Oi—3 to 2 inches; leaf litter of pine and deciduous trees.

Oe—2 inches to 0; partly decomposed leaf litter.

A—0 to 6 inches; dark brown (10YR 3/3) silt loam; brown (10YR 4/3) dry; weak fine granular structure;

friable; many very fine, fine and few coarse roots; 3 percent rock fragments; very strongly acid; clear smooth boundary.

Bw—6 to 24 inches; brown (7.5YR 4/4) silt loam; yellowish brown (10YR 5/6) dry; weak fine subangular blocky structure; friable; common fine and few medium roots; few fine vertical tubular pores; 5 percent rock fragments; very strongly acid; clear wavy boundary.

2C1—24 to 60 inches; dark grayish brown (10YR 4/2) and brown (10YR 4/3) fine sandy loam; few fine faint dark yellowish brown (10YR 4/4) mottles along surfaces of plates; weak medium platy structure; friable; few fine medium roots; few fine discontinuous vertical tubular pores; 7 percent rock fragments, 3 percent more than 3 inches long; strongly acid; gradual wavy boundary.

2C2—60 to 80 inches; dark brown (10YR 3/3) fine sandy loam; few fine faint brown (10YR 4/3) and dark yellowish brown (10YR 4/4) mottles along surfaces of plates; moderate and fine medium platy structure; firm; few fine roots; few fine and medium vertical tubular pores; 13 percent coarse fragments; 3 percent more than 3 inches in diameter; medium acid increasing to mildly alkaline with depth; slightly effervescent at a depth of 75 inches.

The solum ranges from 18 to 36 inches in thickness. Depth to carbonates is more than 40 inches but less than 78 inches. Bedrock is at a depth of more than 60 inches. Rock fragments range from 0 to 10 percent in the solum and from 10 to 35 percent in the 2C horizon. Reaction ranges from very strongly acid to moderately acid in the surface layer and the subsoil and from strongly acid to moderately alkaline in the substratum.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or very fine sandy loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Its texture is silt loam, very fine sandy loam, or loam. Its structure is weak or very weak fine blocky or granular. Its consistence is friable or very friable.

Some pedons have a 2Bw horizon that has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4. Its texture is fine sandy loam to loam. Its structure is weak medium or coarse blocky or granular. Its consistence is friable or very friable.

The 2C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. Few fine faint high chroma mottles are below a depth of 24 inches. Texture of the horizon is fine sandy loam to loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is friable or firm.

Madalin Series

The Madalin series consist of very deep, poorly drained and very poorly drained soils that formed in deposits of lacustrine silt and clay on lake plains. Slope ranges from 0 to 3 percent.

Madalin soils are similar to and commonly near moderately well drained Hudson soils and somewhat poorly drained Rhinebeck soils on lake plains.

Typical pedon of Madalin silt loam, in the town of Hounsfield, 2,600 feet south of the junction of New York Route 3 and Youngs Road, 700 feet west of Youngs Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Eg—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam, coated with grayish brown (2.5Y 5/2) silt loam or very fine sandy loam; common medium and fine faint or distinct grayish brown (10YR 5/2) and dark brown (7.5YR 4/4) mottles; weak thin platy structure; firm; common roots; moderately acid; clear smooth boundary.

Btg1—14 to 20 inches; grayish brown (10YR 5/2) silty clay; many medium faint yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; few roots; common pores lined with clay; silt coats on ped faces in the upper part and clay coats on surfaces of peds in the lower part; slightly acid; clear wavy boundary.

Btg2—20 to 30 inches; dark grayish brown (10YR 4/2) silty clay; many medium faint dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure in weak coarse prisms; firm; common pores lined with clay; clay coats on surfaces of peds; neutral; abrupt wavy boundary.

Cg—30 to 60 inches; gray (10YR 5/1) silty clay varved with silt; massive; firm; weak effervescence; mildly alkaline.

The solum ranges from 24 to 48 inches in thickness. Depth to carbonates ranges from 24 to 60 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid to mildly alkaline in the A horizon, moderately acid to mildly alkaline in the B horizon, and mildly alkaline or moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture (less than 5.5 dry) is silt loam or silty clay loam.

The E horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. It is mottled. Its texture is mainly silt loam, but ranges from very fine sandy loam to silty clay loam.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 6. It has faint to prominent, few to many mottles. Its texture is silty clay loam to clay, and clay content is 35 to 60 percent. Its consistence is firm, plastic and sticky.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 0 to 3. Its texture is silty clay loam to clay, and commonly is varved with silt.

Madrid Series

The Madrid series consists of very deep, well drained soils that formed in glacial till deposits derived mainly from mixed sandstone, limestone, and granite. These soils are on drumlins on upland till plains. Slope ranges from 0 to 50 percent.

Madrid soils are commonly near moderately well drained Bombay soils, somewhat poorly drained and poorly drained Massena soils, and well drained Nellis soils on upland till plains. Madrid soils are similar to Bombay and Massena soils. Unlike Nellis soils, Madrid soils have a clay increase in the subsoil. They are also near moderately deep Galway soils.

Typical pedon of Madrid sandy loam, 3 to 8 percent slopes, in the town of Adams, 1.1 miles north of the intersection of U.S. Route 11 and New York Route 177, 2,000 feet northeast of U.S. Route 11 and 400 feet north of the Department of Environmental Conservation (DEC) woodlot:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam; moderately medium granular structure; very friable; common fine and few medium roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

Bw1—8 to 21 inches; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure; friable; common fine and few medium roots; common fine pores; organic material is lining the macro pores; 10 percent coarse fragments; slightly acid; clear wavy boundary.

Bw2—21 to 28 inches; yellowish brown (10YR 5/4) sandy loam; moderate medium platy structure; firm; common fine and few medium roots; common fine and few medium tubular pores; 10 percent coarse fragments, 2 percent more than 3 inches in diameter; clean sand grains; organic material lining some macro pores; neutral; gradual wavy boundary.

B/E—28 to 32 inches; (B part) dark brown (10YR 3/3) fine sandy loam; moderate medium subangular blocky structure; firm; few fine and medium roots; common fine and few medium tubular pores; clay lines some pores, bridges some sand grains, and is present as patches of clay flow on faces of peds; (E part) pale brown (10YR 6/3) fine sandy loam; 10 percent coarse fragments, 2 percent more than 3 inches in diameter; mildly alkaline; gradual wavy boundary.

Bt—32 to 38 inches; dark brown (10YR 3/3) fine sandy loam; moderate medium subangular blocky structure; firm; few fine roots; few fine and medium tubular pores; clay lines pores, bridges some sand grains, and is present as discontinuous clay skins on faces of peds; skeletans on some ped faces; 14 percent coarse fragments, 2 percent more than 3 inches in diameter; slight effervescence; moderately alkaline; clear wavy boundary.

C—38 to 60 inches; brown (10YR 5/3) gravelly fine sandy loam; massive; firm; few fine roots; 25 percent coarse fragments, 5 percent more than 3 inches in diameter; strong effervescence; moderately alkaline.

The solum ranges from 36 to 60 inches in thickness. Depth to carbonates ranges from 36 to 84 inches. Depth to bedrock is more than 60 inches. Rock fragments range from 0 to 15 percent in the A horizon, from 5 to 35 percent in the B horizon, and from 5 to 45 percent in the C horizon. Reaction ranges from strongly acid to slightly acid in the A horizon, from strongly acid to mildly alkaline in the B horizon, from moderately acid to moderately alkaline in the Bt horizon, and from neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture ranges from silt loam to sandy loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 2.5Y and value and chroma of 3 to 6. Its texture is silt loam to sandy loam in the fine earth fraction.

The B part of the B/E horizon is similar in color and texture to the B horizon above. The E part has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 2 or 3. Interfingering ranges from 5 to 15 percent of E material, and some peds are entirely coated with eluviated material. Texture of the E part is silt loam to sandy loam in the fine earth fraction.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam to fine sandy loam in the fine earth fraction. Its structure is weak or moderate, medium or coarse blocky. Its consistence is friable or firm.

The C horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam to fine sandy loam, and includes some thin layers of coarser soil material in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is friable or firm.

Manlius Series

The Manlius series consists of moderately deep, well drained to excessively drained soils that formed in a thin mantle of glacial till of frost-disturbed material derived from shale. These soils are on uplands cored with

bedrock. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 3 to 50 percent.

Manlius soils are similar to and commonly near shallow, somewhat excessively drained Nassau soils and moderately deep, somewhat poorly drained Angola soils and poorly drained and somewhat poorly drained Allis soils on uplands.

Typical pedon of Manlius shaly silt loam, 3 to 8 percent slopes, in the town of Champion, 2,500 feet south of the junction of New York Route 12 and County Route 69, 130 feet east of County Route 69:

Ap—0 to 7 inches; dark brown (10YR 3/3) shaly silt loam; moderate fine granular structure; very friable; many fine roots; 15 percent coarse shale fragments; very strongly acid; clear smooth boundary.

Bw—7 to 16 inches; brown (10YR 4/3) very shaly silt loam; weak fine subangular blocky structure; friable; common fine roots; 45 percent coarse shale fragments; very strongly acid; abrupt wavy boundary.

C—16 to 36 inches; dark grayish brown (10YR 4/2) very shaly silt loam; massive; friable; 60 percent coarse shale fragments; strongly acid; gradual wavy boundary.

R—36 inches; shale bedrock.

The solum ranges from 15 to 30 inches in thickness. Bedrock is at a depth of 20 to 40 inches. Coarse fragments, dominantly shale, range from 15 to 35 percent in the Ap horizon and from 30 to 65 percent in the B and C horizons. Reaction ranges from extremely acid to strongly acid in the solum and from very strongly acid to slightly acid in the substratum.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or very weak, very fine to medium granular or subangular blocky. Its consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is silt loam or loam in the fine earth fraction. The horizon is massive, or its structure is platy.

The R horizon is shale bedrock or shale interbedded with sandstone.

Massena Series

The Massena series consists of very deep, somewhat poorly drained and poorly drained soils that formed in calcareous glacial till derived mostly from limestone. These soils are on upland till plains. Slope ranges from 0 to 8 percent.

Massena soils are commonly near well drained Madrid soils and moderately well drained Bombay soils on ridges and very poorly drained and poorly drained Sun soils in depressions.

Typical pedon of Massena silt loam, 3 to 8 percent slopes, in the town of Champion, approximately 1 mile north of the intersection of New York Route 12 and Switzer Road, 190 feet west of Switzer Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common medium and fine roots; neutral; abrupt smooth boundary.

Bw1—9 to 16 inches; yellowish brown (10YR 5/6) gravelly loam; common fine faint brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; grayish brown (10YR 5/2) ped faces; few fine roots; 15 percent coarse fragments; neutral; clear wavy boundary.

Bw2—16 to 27 inches; yellowish brown (10YR 5/4) gravelly loam; common fine faint grayish brown (10YR 5/2) and distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; grayish brown (10YR 5/2) ped faces; 15 percent coarse fragments; neutral; clear wavy boundary.

C—27 to 60 inches; grayish brown (10YR 5/2) gravelly sandy loam; few fine faint dark yellowish brown (10YR 4/4) and few medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; gray (10YR 6/1) soft powdery lime streaks; 25 percent coarse fragments; weak effervescence; mildly alkaline.

The solum ranges from 18 to 37 inches in thickness. Depth to carbonates ranges from 20 to 50 inches. Bedrock is at a depth of more than 60 inches. Rock fragments range from 5 to 35 percent in the solum and from 5 to 50 percent in the C horizon. Reaction ranges from moderately acid to neutral in the A and B horizons and from neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5, value of 3 or 4, and chroma of 1 or 2. Dry value is 6. Texture of the horizon is silt loam to sandy loam in the fine earth fraction.

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. It is mottled. Its texture is loam, fine sandy loam, or sandy loam in the fine earth fraction. Its structure is weak medium or fine subangular blocky, or the horizon is massive. Its consistence is friable or very friable.

The C horizon is similar to the B horizon in color and in texture in the fine earth fraction. Its structure is platy, or the horizon is massive.

Millsite Series

The Millsite series consists of moderately deep, well drained and somewhat excessively drained soils that

formed in a mantle of glacial till. These soils are 20 to 40 inches deep over gneiss, granite, or schist and lesser amounts of Grenville marble bedrock. Slope ranges from 0 to 50 percent.

Millsite soils are commonly near shallow, well drained Insula soils and somewhat poorly drained and poorly drained Ruse soils. Millsite soils are also near deep, somewhat poorly drained Rhinebeck soils and poorly drained and very poorly drained Madalin soils on lake plains. Millsite soils are not as clayey as these soils.

Typical pedon of Millsite loam, in an area of Millsite-Rock outcrop complex, rolling, in the town of Theresa, 1.3 miles northeast of the junction of New York 37 and Cottage Hill Road, 225 feet north of Cottage Hill Road:

A—0 to 6 inches; very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many fine and medium roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

Bw1—6 to 12 inches; brown (7.5YR 5/4) loam; weak medium subangular blocky structure; friable; common medium roots; 10 percent coarse fragments; strongly acid; clear smooth boundary.

Bw2—12 to 20 inches; brown (7.5YR 4/4) gravelly loam; weak medium subangular blocky structure; friable; few roots; 25 percent coarse fragments; strongly acid; clear smooth boundary.

C—20 to 28 inches; yellowish brown (10YR 5/6) gravelly loam; massive; friable; 30 percent coarse fragments; strongly acid; abrupt wavy boundary.

R—28 inches; gray (10YR 5/1) gneiss bedrock.

The solum ranges from 16 to 36 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Coarse fragments range from 5 to 15 percent in the A horizon and from 5 to 35 percent in the B and C horizons. Reaction ranges from very strongly acid to slightly acid throughout.

The Ap, or A, horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. Its texture is loam to sandy loam. Its structure is weak or moderate, fine or medium granular. Its consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6. Its texture is loam to sandy loam in the fine earth fraction. Its structure is fine to coarse subangular blocky. Its consistence is friable or very friable.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. Its texture is loam to sandy loam in the fine earth fraction. Its structure is medium or coarse platy, or the horizon is massive. Its consistence is friable or firm.

Minoa Series

The Minoa series consists of very deep, somewhat poorly drained soils that formed in water-sorted sediments dominated by very fine sand and fine sand. These soils are in deltas of former glacial lakes. Slope ranges from 0 to 3 percent.

Minoa soils are similar to and commonly near well drained Arkport soils, moderately well drained Galen soils, and poorly drained and very poorly drained Lamson soils. Minoa soils are also near moderately well drained Collamer soils and somewhat poorly drained Niagara soils. They are not as clayey as Collamer and Niagara soils.

Typical pedon of Minoa fine sandy loam, in the town of Ellisburg, 1,050 feet west of Eldorado Road and 32 feet south of Bolton Road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; moderate medium granular structure; friable; many fine roots; neutral; clear wavy boundary.

Bw1—8 to 13 inches; brown (10YR 5/3) loamy very fine sand; weak fine granular structure; very friable; common fine and medium roots; common fine and medium pores; neutral; clear wavy boundary.

Bw2—13 to 27 inches; brown (10YR 4/3) loamy very fine sand; many medium distinct yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) mottles; weak fine granular structure; friable; few fine roots; few fine pores; neutral; clear wavy boundary.

C—27 to 60 inches; pale brown (10YR 6/3) loamy fine sand; single grain; loose; weak effervescence in the lower part; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates is 40 inches. Depth to bedrock is more than 60 inches. Most pedons do not have rock fragments, but in some pedons they make up as much as 5 percent of the volume. Reaction ranges from strongly acid to neutral in the A and B horizons and from moderately acid to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or fine sandy loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 or 4. Its texture is loamy very fine sand, silt loam, and fine sandy loam. Its structure is fine to medium granular, weak to medium platy, and the horizon is single grain. Its consistence is very friable to loose.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. Its texture is loamy fine sand to silt loam. The horizon is single grain or massive. Its consistence is friable or loose.

Muskellunge Series

The Muskellunge series consists of very deep, somewhat poorly drained soils that formed in lacustrine deposits that have a high content of silt and clay. These

soils are on lake plains and adjacent uplands mantled with lacustrine sediments. Slope ranges from 0 to 15 percent.

Muskellunge soils are commonly near moderately well drained Heuvelton soils. They are also near moderately deep, well drained and somewhat excessively drained Millsite soils. Muskellunge soils are more clayey than Millsite soils.

Typical pedon of Muskellunge silt loam, 0 to 3 percent slopes, in the town of Antwerp, 1.13 miles north of the intersection of New York Route 26 and Houghton Road, 1,848 feet east of Houghton Road, in hayfield:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; common fine roots; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) silt loam; common fine and medium distinct brown (7.5YR 4/4) mottles; weak fine subangular blocky structure; friable; common fine roots; strongly acid; clear wavy boundary.

Bt1—12 to 18 inches; brown (10YR 4/3) silty clay; many medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; plastic and sticky; few fine roots along faces of prisms; common fine pores with clay linings; surface of peds are grayish brown (10YR 5/2) silt; strongly acid; clear smooth boundary.

Bt2—18 to 26 inches; dark grayish brown (10YR 4/2) silty clay; many medium distinct dark yellowish brown (10YR 4/4) mottles; moderate coarse prismatic structure; firm; plastic and sticky; few fine roots along faces of prisms; common fine and few medium pores with clay linings; dark gray (10YR 4/1) clay films on most ped faces; slightly acid; clear smooth boundary.

C1—26 to 30 inches; grayish brown (10YR 5/2) silty clay; common medium and fine olive brown (2.5Y 4/4) and gray (5Y 5/1) mottles; massive; firm; neutral; clear smooth boundary.

C2—30 to 60 inches; dark gray (10YR 4/1) silty clay varved with silt; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates ranges from 20 to 60 inches. Depth to bedrock is more than 60 inches. Rock fragments range from 0 to 5 percent in the solum and from 0 to 10 percent in the substratum. Reaction ranges from strongly acid to neutral in the A horizon, from strongly acid to mildly alkaline in the B horizon, and from neutral to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. Its texture is silt loam or silty clay loam.

The E horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3. It is mottled. Its texture is silt loam or silty clay loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is mottled. Its texture is silty clay loam or silty clay within the range of 35 to 60 percent clay. Its structure is weak to strong prismatic to subangular or angular blocky. Its consistence is firm or very firm.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3. Its texture is silty clay or clay, and is commonly varved with silt.

Nassau Series

The Nassau series consists of shallow, somewhat excessively drained soils that formed in glacial till dominated by shale. These soils are on uplands cored with bedrock. These soils are shaly or very shaly throughout. Bedrock is at a depth of 10 to 20 inches. Slope ranges from 8 to 50 percent.

Nassau soils are near moderately deep, well drained and excessively drained Manlius soils and poorly drained and somewhat poorly drained Allis soils, and very deep, well drained and moderately well drained Pinckney soils on glacial till uplands. Unlike Nassau soils, Pinckney soils have a fragipan.

Typical pedon of Nassau shaly silt loam, 8 to 15 percent slopes, in the town of Champion, approximately 0.6 mile south of New York Route 12 and 660 feet east of Lee Road along the south side of Sandy Creek:

Ap—0 to 5 inches; dark brown (10YR 3/3) shaly silt loam; moderate fine granular structure; friable; 30 percent shale fragments; strongly acid; clear wavy boundary.

Bw—5 to 14 inches; brown (10YR 5/3) very shaly silt loam; weak medium blocky structure; friable; 40 percent shale fragments; strongly acid; gradual wavy boundary.

R—14 inches; very dark brown (10YR 2/2) and black (10YR 2/1) shale bedrock.

The solum ranges from 10 to 20 inches in thickness. Bedrock is at a depth of 10 to 20 inches. Coarse fragments, mostly shale, range from 15 to 35 percent in the A horizon and from 35 to 70 percent in the B horizon. Reaction is strongly acid or very strongly acid.

The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or moderate, medium or fine subangular blocky. Its consistence is friable or very friable.

The R horizon is mainly shale bedrock or interbedded shale and sandstone bedrock.

Nellis Series

The Nellis series consists of very deep, well drained soils that formed in glacial till on uplands. Slope ranges from 0 to 50 percent.

Nellis soils are similar to and commonly near moderately well drained Amenia soils, somewhat poorly drained and poorly drained Massena soils, and very poorly drained and poorly drained Sun soils on uplands. They are also near moderately deep, well drained and moderately well drained Galway soils.

Typical pedon of Nellis loam, 8 to 15 percent slopes, in the town of Adams, 3,400 feet south of the intersection of Caird and Fuller Roads, 530 feet west of Fuller Road:

Ap—0 to 9 inches; dark brown (10YR 3/3) loam; moderate medium subangular blocky structure parting to moderate medium and fine granular; friable; common fine roots; 3 percent coarse fragments, less than 1 percent more than 3 inches in diameter; neutral; abrupt smooth boundary.

Bw—9 to 21 inches; dark yellowish brown (10YR 4/4) loam; weak medium and fine subangular blocky structure; friable; few fine roots; common fine pores; few worn channels and macro pores filled with organic matter; 3 percent coarse fragments, less than 1 percent more than 3 inches in diameter; mildly alkaline; clear wavy boundary.

2C1—21 to 35 inches; brown (10YR 5/3) gravelly fine sandy loam; common fine and medium faint brown (7.5YR 5/4) mottles below a depth of 24 inches; weak thin and medium platy structure; firm; few fine roots in upper part; few medium and fine pores; many striped sand grains; 25 percent coarse fragments, 3 percent more than 3 inches in diameter; weak effervescence; moderately alkaline; gradual wavy boundary.

2C2—35 to 72 inches; light brownish gray (10YR 6/2) gravelly fine sandy loam; few fine faint yellowish brown (10YR 5/6) and brown (7.5YR 5/4) mottles; massive; firm; few medium pores; 25 percent coarse fragments, 5 percent more than 3 inches in diameter; strong effervescence; moderately alkaline.

The thickness of the solum and, commonly, depth to carbonates range from 15 to 36 inches. Depth to bedrock is more than 40 inches and commonly more than 60 inches. Rock fragments range from 3 to 35 percent in the solum and from 5 to 50 percent in the substratum. Reaction ranges from moderately acid to neutral in the upper part of the solum, ranges from moderately acid to mildly alkaline in the lower part of the solum, and is mildly alkaline or moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is loam or silt loam in the fine earth fraction.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky or granular. Its consistence is friable or very friable.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 7, and chroma of 2 to 6. Its texture is sandy loam to loam in the fine earth fraction. Its structure is weak or moderate, thin or medium platy, or the horizon is massive.

Newstead Series

The Newstead series consists of moderately deep, somewhat poorly drained and poorly drained soils that formed in glacial till dominated by limestone on upland till plains. Limestone bedrock is at a depth of 20 to 40 inches. Slope ranges from 0 to 3 percent.

Newstead soils are commonly near shallow, somewhat excessively drained and excessively drained Benson soils, moderately deep, well drained and moderately well drained Galway soils, and very deep, somewhat poorly drained and poorly drained Massena soils and very poorly drained and poorly drained Sun soils. Newstead soils are less gravelly than Benson soils.

Typical pedon of Newstead silt loam, in the town of Adams, 1,600 feet north of the junction of New York Route 177 and Fuller Road, 800 feet east of Fuller Road:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; common roots; 5 percent coarse fragments; neutral; abrupt smooth boundary.

Bg1—8 to 16 inches; grayish brown (2.5Y 5/2) silt loam; common medium faint olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; friable; few roots; common pores; 5 percent coarse fragments; neutral; clear wavy boundary.

Bg2—16 to 22 inches; grayish brown (2.5Y 5/2) gravelly loam; many (45 percent) medium distinct yellowish brown (10YR 5/4) and light olive brown (2.5Y 5/6) mottles; moderate medium subangular blocky structure; friable; few roots; common pores; 15 percent coarse fragments; mildly alkaline; clear wavy boundary.

Cg—22 to 30 inches; grayish brown (2.5Y 5/2) gravelly loam; common medium faint light olive brown (2.5Y 5/4) and olive brown (2.5Y 4/4) mottles; massive; firm; 30 percent coarse fragments; weak effervescence; moderately alkaline; clear wavy boundary.

R—30 inches; gray (10YR 5/1) limestone bedrock.

The solum ranges from 12 to 30 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. Coarse fragments, more than 3 inches in diameter, range from 2 to 35 percent. Reaction ranges from moderately acid to mildly alkaline in the Ap horizon, from slightly acid to moderately alkaline in the B horizon, and from neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. Its texture is sandy loam to silt loam in the fine earth fraction.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It has few to many faint or distinct mottles. Its texture is sandy loam to silt loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky. Its consistence is friable or firm.

The C horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It has few to many faint or distinct mottles. Its texture is sandy loam to silt loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is friable or firm.

The R horizon is calcitic or dolomitic limestone bedrock.

Niagara Series

The Niagara series consists of deep and very deep, somewhat poorly drained soils that formed in stratified, silty, calcareous, lake-laid sediments on lake plains. Slope ranges from 0 to 8 percent.

Niagara soils are commonly near moderately well drained Collamer soils and poorly drained and very poorly drained Canandaigua soils. These Niagara soils make up a drainage catena. Niagara soils are near well drained Madrid soils and moderately well drained Bombay soils on drumlins.

Typical pedon of Niagara silt loam, 0 to 3 percent slopes, along the Adams and Hounsfield town lines, 0.75 mile southwest of the intersection of Cady, Maxon, and Waite Roads, 400 feet west of Cady Road:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam; pale brown (10YR 6/3) dry; root stains are yellowish red (5YR 5/6); weak fine and very fine granular structure; very friable; some bleached sand grains, many very fine roots; neutral; abrupt smooth boundary.

E—9 to 13 inches; dark grayish brown (10YR 4/2) silt loam; grayish brown (10YR 5/2) dry; many, medium, faint strong brown (7.5YR 5/6) mottles; weak medium and fine subangular blocky structure; friable; common very fine roots; few fine discontinuous tubular pores; few macro pores filled with very dark grayish brown (10YR 3/2) Ap material; some bleached sand grains; neutral; clear smooth boundary.

Bt1—13 to 25 inches; brown (10YR 4/3) silt loam; ped faces are dark grayish brown (10YR 4/2); (40 percent) many, medium, faint strong brown (7.5YR 5/6) and few, medium, faint dark yellowish brown (10YR 4/4) mottles; moderate medium and coarse angular blocky structure; friable; common very fine roots; common fine tubular pores (some clay filled); some macro pores filled with very dark grayish brown (10YR 3/2); mildly alkaline; clear wavy boundary.

Bt2—25 to 35 inches; dark grayish brown (10YR 4/2) silt loam (30 percent clay); ped faces are grayish brown (10YR 5/2); many (45 percent), medium and coarse, faint yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6 and 5/8) mottles; weak coarse prismatic structure parting to moderate medium and coarse angular blocky; prism faces have continuous silt coats; firm; few fine roots; common fine and very fine pores; few medium pores, some pores clay lined; patchy clay flow on faces of peds; mildly alkaline; gradual smooth boundary.

C1—35 to 56 inches; dark grayish brown (10YR 4/2) and dark brown (10YR 3/3) silt loam; many (30 percent), medium, faint strong brown and few, fine prominent greenish gray (5GY 6/1) mottles; weak very coarse prismatic structure parting to weak platy, and some of the horizon has rock structure; prism faces are grayish brown (10YR 5/2); firm; no roots; few fine discontinuous tubular pores; neutral; gradual smooth boundary.

C2—56 to 75 inches; dark grayish brown (10YR 4/2) silt loam; many (30 percent) medium faint yellowish brown (10YR 5/4 and 5/6) and few, fine, prominent greenish gray (5GY 6/1) mottles; weak thick and medium platy structure, in bedrock; firm; no roots; few fine discontinuous tubular pores; weak effervescence; neutral.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates range from 20 to 56 inches. Depth to bedrock is more than 60 inches. Few or no coarse fragments are in the solum and the substratum. Reaction ranges from strongly acid to neutral in the surface layer, moderately acid to mildly alkaline in the subsoil, and neutral to moderately alkaline in the substratum.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or very fine sandy loam.

The E horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 or 3. Its texture is silt loam or very fine sandy loam. Its structure is weak or medium, fine subangular blocky or platy, or the horizon is massive. Its consistence is friable or very friable.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. It has faint to prominent mottles. Its texture is silt loam, very fine sandy loam, or silty clay loam. Some pedons have thin subhorizons of

finer or coarser texture. Structure of the horizon is medium to moderate angular or subangular blocky, and some patchy clay skins are on faces of peds. Consistence is friable or firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 or 3. Its texture is silt loam, silty clay loam, or stratified layers of fine sand to clay. It has distinct or prominent mottles.

Palms Series

The Palms series consists of very poorly drained soils that formed in deposits of organic material, 16 to 50 inches thick, over loamy mineral soil deposits in bogs and depressions on lake plains, till plains, and outwash plains. Slope ranges from 0 to 3 percent.

Palms soils are commonly near deep, very poorly drained, Carlisle soils in some bogs. They are also near poorly drained and very poorly drained Granby soils on outwash plains and poorly drained and very poorly drained Lamson soils on lake plains. Palms soils are similar to but not as deep as Carlisle soils. Palms soils formed in organic material, but Granby and Lamson soils formed in mineral material.

Typical pedon of Palms muck, in the town of Hounsfield, 1,800 feet south of the junction of Fields and Old Rome Roads, 300 feet west of Old Rome Road, in Beaver Meadows swamp:

Oa1—0 to 16 inches; black (10YR 2/1) broken face, black (5YR 2/1) rubbed, muck (sapric material); 5 percent undisturbed fiber, less than 5 percent rubbed; weak medium granular structure; friable; slightly sticky; fibers are herbaceous and woody; 10 percent mineral; pH 6.8 in water; abrupt smooth boundary.

Oa2—16 to 24 inches; black (5YR 2/1) and grayish brown (10YR 5/2) broken face, black (5Y 2/1) rubbed, muck (sapric material); 10 percent undisturbed fiber, less than 5 percent rubbed; massive; friable; slightly sticky; fibers are herbaceous and woody; 10 percent mineral; 12 percent woody coarse fragments; pH 6.8 in water; clear smooth boundary.

Oa3—24 to 45 inches; dark reddish brown (5YR 3/2) broken face, black (5YR 2/1) rubbed, muck (sapric material); 5 percent undisturbed fiber, less than 5 percent rubbed; massive; friable; slightly sticky; fibers are herbaceous and woody; 15 percent mineral material; pH 6.8 in water; abrupt smooth boundary.

2Cg—45 to 65 inches; dark gray (5Y 4/1) sandy clay loam; thin lenses of coarse sand in upper part; few fine distinct dark grayish brown (2.5Y 4/2) mottles; massive; friable; pH 6.8 in water.

Depth to the loamy 2C horizon ranges from 16 to 50 inches, but is typically 20 to 45 inches. The organic fiber is from both herbaceous and woody plant material. Some pedons have thin layers of hemic or fibric material, but these layers total less than 10 inches of the combined thickness of the surface and subsurface tiers. Woody coarse fragments, consisting of twigs, stems, and some logs, make up 5 to 15 percent, by volume, of the total control section above the loamy 2C horizon. Reaction ranges from strongly acid to mildly alkaline throughout the organic material and from slightly acid to moderately alkaline in the 2C horizon. In some pedons the organic material in layers above the loamy 2C horizon is about 40 percent, by volume, mineral material.

The surface tier has hue of 10YR to 5YR, value of 2, and chroma of 1 or 2 on broken face and rubbed material. Rubbed fiber make up less than one-sixth of the total volume. Its structure is weak granular, blocky or platy, or the tier is massive.

The subsurface and bottom tiers have hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 to 3 on broken face and rubbed material. Their structure is weak thin or thick platy or weak medium or coarse blocky, or the tiers are massive.

The 2C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. Its texture is fine sandy loam to clay loam, and it averages less than 35 percent clay.

Phelps Series

The Phelps series consists of very deep, moderately well drained soils that formed in loamy deposits overlying sand and gravel on outwash terraces and alluvial fans. Slope ranges from 0 to 8 percent.

Phelps soils are commonly near excessively drained Groton soils and very poorly drained Halsey soils on terraces. Phelps soils are less gravelly in the subsoil. They are similar to Halsey soils.

Typical pedon of Phelps gravelly loam, 0 to 3 percent slopes, in the town of Adams, about 1/2 mile southwest of Michael Road and 400 feet southeast of County Route 76:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly loam, light brownish gray (10YR 6/2) dry; moderate medium structure; friable; many fine and medium roots; 20 percent coarse fragments; neutral; clear smooth boundary.

Bw—7 to 14 inches; brown (7.5YR 5/4) gravelly loam; weak medium subangular blocky structure; friable; slightly sticky; common fine and few medium roots; few large and medium pores lined with silt; 20 percent coarse fragments; neutral; clear wavy boundary.

BC—21 to 30 inches; dark yellowish brown (10YR 3/4) gravelly loam; common medium distinct grayish brown (10YR 5/2) and few fine faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; slightly sticky;

few fine roots; few medium pores lined with silt; 20 percent coarse fragments; mildly alkaline; clear wavy boundary.

C1—30 to 36 inches; grayish brown (2.5Y 5/2) very gravelly sandy loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium and fine granular structure; friable; few fine roots; few fine pores; 35 percent coarse fragments; weak effervescence; mildly alkaline; diffuse boundary.

2C2—36 to 50 inches; gray (10YR 5/1) and light gray (10YR 7/1) stratified sand and gravel; single grain; loose; 40 percent coarse fragments; strong effervescence; moderately alkaline.

The solum ranges from 24 to 36 inches in thickness. Depth to carbonates ranges from 18 to 40 inches. Depth to bedrock is more than 60 inches. Rock fragments range from 5 to 35 percent, by volume, in the solum and from 35 to 70 percent in the substratum. Reaction ranges from moderately acid to mildly alkaline in the solum and is mildly alkaline or moderately alkaline in the substratum.

The Ap, or A1, horizon has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 1 or 2. Dry color value is 6. In some pedons a thin organic layer overlies this horizon. Texture of the horizon is sandy loam to silt loam in the fine earth fraction.

The B horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. It has few to many high and low chroma mottles. Its texture is clay loam, loam, or silt loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. Its texture is sandy loam to silt loam in the fine earth fraction.

The 2C horizon is stratified sand and gravel.

These soils are a taxadjunct to the Phelps series because they do not have an argillic horizon. However, they are similar in use and management to the Phelps series.

Pinckney Series

The Pinckney series consists of very deep, well drained and moderately well drained soils that formed in glacial till on uplands. Slope ranges from 2 to 30 percent.

Pinckney soils are commonly near very deep, well drained Bice soils and poorly drained and very poorly drained Ensley soils on uplands. Unlike Bice and Ensley soils, Pinckney soils have a fragipan horizon. Pinckney soils are also near moderately deep, well drained and excessively drained Manlius soils, somewhat poorly drained Angola soils, and poorly drained and somewhat poorly drained Allis soils, and shallow, somewhat excessively drained Nassau soils on uplands overlying bedrock. Also, unlike these soils, Pinckney soils have a fragipan horizon.

Typical pedon of Pinckney silt loam, in an area of Bice-Pinckney complex, undulating, in the town of Lorraine, 1 mile east of Lawrence Road on Middle Road, 260 feet north of Middle Road and 20 feet east of Plantation Road:

Ap—0 to 7 inches; dark brown (10YR 4/3) and dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine and few medium roots; 5 percent coarse fragments, 1 percent more than 3 inches in diameter; strongly acid; clear smooth boundary.

Bw1—7 to 11 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; friable; common fine and few medium roots; common very fine random vertical tubular pores; 10 percent coarse fragments, 1 percent more than 3 inches in diameter; very strongly acid; abrupt smooth boundary.

Bw2—11 to 22 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; friable; common fine and few medium roots; common very fine random vertical tubular pores; 10 percent coarse fragments; 1 percent more than 3 inches in diameter; very strongly acid; clear smooth boundary.

2Bx1—22 to 48 inches; brown (10YR 5/3) channery loam that has light grayish brown (10YR 6/2) and yellowish red (5YR 4/6) streaks between prisms; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle; few fine and medium roots between prisms; common fine vertical tubular pores with thin patchy clay linings; 20 percent coarse fragments; 5 percent more than 3 inches in diameter; strongly acid; gradual irregular boundary.

2Bx2—48 to 64 inches; dark grayish brown (10YR 4/2) channery loam that has light grayish brown (10YR 6/2) and yellowish red (5Y 4/6) streaks between prisms; strong very coarse prismatic structure parting to strong medium platy; firm and brittle; few fine and medium roots between prisms; common fine vertical tubular pores with thin patchy clay linings; 20 percent coarse fragments; 5 percent more than 3 inches in diameter; strongly acid; gradual irregular boundary.

2C—64 to 72 inches; dark brown (10YR 3/3) channery loam; massive; friable; few horizontal tubular pores; 25 percent coarse fragments; 10 percent more than 3 inches in diameter; moderately acid.

The solum ranges from 40 to 70 inches in thickness. Depth to the fragipan is 20 to 30 inches. Rock fragments, mainly shale, and including some that is granitic and sandstone, range from 0 to 15 percent in the surface layer, from 0 to 20 percent in the subsoil above the fragipan, and from 10 to 35 percent in the

fragipan and the C horizon. As much as 15 percent of rock fragments are more than 3 inches in diameter. Reaction ranges from very strongly acid to moderately acid above the fragipan, strongly acid to slightly acid in the fragipan, and strongly acid to neutral in the C horizon.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Some pedons in uncultivated areas have a thin E horizon that is 1 to 3 inches thick. Texture of the horizon is silt loam, loam, or very fine sandy loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. Its texture is silt loam, loam, or very fine sandy loam in the fine earth fraction. Its structure is very weak or weak fine to coarse subangular blocky or granular. Its consistence is friable or very friable. Some pedons have a thin, light grayish brown to pale brown E' or 2E horizon that is above the fragipan and that ranges from silt loam to fine sandy loam. Some pedons have faint mottling in the lower part of the Bw and E horizons.

The 2Bx horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 or 3. Its texture is loam or fine sandy loam in the fine earth fraction. Its structure is strong or moderate very coarse prismatic parting to subangular blocky or platy, or the horizon is massive within prisms. Its consistence is firm or very firm and brittle.

The 2C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is loam or fine sandy loam in the fine earth fraction. Its consistence is friable or firm.

Plainfield Series

The Plainfield series consists of very deep, excessively drained soils that formed in sandy deposits on outwash plains and stream terraces. Slope ranges from 0 to 35 percent.

Plainfield soils are commonly near moderately well drained Deerfield soils, excessively drained Windsor soils, somewhat poorly drained and poorly drained Wareham soils, and very poorly drained Scarboro soils. Plainfield soils are similar to the associated soils, except that in most pedons they have coarser sand than these soils.

Typical pedon of Plainsfield sand, 0 to 8 percent slopes, in the town of Hounsfield, 660 feet southeast of the intersection of County Route 62 and Spencer Road, 1,200 feet southwest of Spencer Road:

Ap—0 to 8 inches; dark brown (10YR 3/3) sand; single grain; loose; common fine roots; strongly acid; abrupt smooth boundary.

Bw1—8 to 22 inches; strong brown (7.5YR 5/6) sand; single grain; loose; few fine roots; very strongly acid; abrupt smooth boundary.

Bw2—22 to 28 inches; yellowish brown (10YR 5/6) sand; single grain; loose; few fine roots; very strongly acid; gradual wavy boundary.

C—28 to 65 inches; yellowish brown (10YR 5/4) sand; single grain; loose; strongly acid.

The solum ranges from 18 to 34 inches in thickness. Depth to bedrock is more than 60 inches. Some pedons contain as much as 15 percent gravel, by volume, but generally pedons do not have rock fragments. Reaction ranges from very strongly acid to neutral in the A horizon and from very strongly acid to slightly acid in the B and C horizons. Some pedons have an Oi or Oe horizon.

The Ap, or A, horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is loamy fine sand, loamy sand, or sand.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. Its texture is sand. Its structure is very weak fine granular, or the horizon is single grain. Its consistence is very friable or loose.

The C horizon commonly has hue of 10YR but ranges to 7.5YR, value from 5 to 7, and chroma of 4 to 8. Its texture is predominantly coarse sand, sand, or fine sand. The horizon is single grain and loose. In some pedons some contracting strata are below a depth of 40 inches.

Pootatuck Series

The Pootatuck series consists of very deep, moderately well drained soils that formed in loamy alluvial deposits derived mainly from crystalline rock of granite and gneiss. The soils are on flood plains near major streams and rivers. Slope ranges from 0 to 3 percent.

Pootatuck soils are commonly near poorly drained and very poorly drained Wayland soils on flood plains. Pottatuck soils are better drained than Wayland soils.

Typical pedon of Pootatuck fine sandy loam, in the town of Watertown, 75 feet north of Coffeen Street, 200 feet west of Watertown Fair Grounds:

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw1—8 to 14 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Bw2—14 to 24 inches; brown (10YR 4/3) sandy loam, common medium distinct dark brown (7.5YR 4/2) and common medium faint yellowish brown (10YR 5/4) mottles; weak medium granular structure; friable; few fine roots; slightly acid; clear wavy boundary.

2C—24 to 60 inches; dark yellowish brown (10YR 4/4) sand; common medium distinct yellowish brown (10YR 5/4) and few medium distinct very dark gray

(10YR 3/1) mottles; single grain; loose; few fine roots; slightly acid.

The solum ranges from 20 to 40 inches in thickness. Most pedons do not have rock fragments in the solum and the substratum, but they range up to as much as 10 percent, by volume, in the solum and 35 percent in the substratum. Reaction ranges from strongly acid to slightly acid in the solum and the substratum.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4.

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. Distinct or prominent low chroma mottles are above a depth of 24 inches. Texture of the horizon is sandy loam or fine sandy loam. Its structure is weak or moderate medium granular. Its consistence is friable or very friable.

The 2C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 5. It has distinct or prominent mottles. Its texture is loamy sand or sand in the fine earth fraction.

Quetico Series

The Quetico series consists of very shallow, somewhat excessively drained soils that formed in a thin mantle of glacial till or residuum. The underlying bedrock is mainly Potsdam sandstone, gneiss, granite, and schist and partly dolomite. Bedrock is at a depth of less than 10 inches. Slope ranges from 0 to 8 percent.

Quetico soils are commonly near shallow, well drained Insula soils and poorly drained and very poorly drained Ruse soils on parts of the same landscapes. They are also near moderately deep, well drained and somewhat excessively drained Millsite soils on ridges and moderately deep, somewhat poorly drained Chaumont soils in low areas. Quetico soils are similar to Insula, Ruse, and Millsite soils. They are less clayey than Chaumont soils.

Typical pedon of Quetico loam, in an area of Insula-Quetico complex, rocky, 0 to 8 percent slopes, in the town of Theresa, between Crystal Lake and the village of Redwood, 3,400 feet south of the junction of Cottage Hill Road and New York Route 37, 40 feet southwest of New York Route 37:

A—0 to 4 inches; dark brown (7.5YR 3/2) loam; weak medium granular structure; friable; many roots; 5 percent coarse fragments; strongly acid; abrupt smooth boundary.

BA—4 to 9 inches; dark reddish brown (5YR 3/4) gravelly sandy loam; weak medium granular structure; friable; many roots; 25 percent coarse fragments; strongly acid; clear smooth boundary.

R—9 inches; Potsdam sandstone.

The solum is less than 10 inches in thickness. Bedrock is at a depth of less than 10 inches. Rock fragments range from 2 to 25 percent. Reaction is very strongly acid or strongly acid.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 2 or 3. Its texture is loam or sandy loam. In some pedons a thin O2 horizon overlies the mineral surface layer.

The BA horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6. Its texture is loam or sandy loam in the fine earth fraction. Its structure is weak granular or weak blocky. Its consistence is friable or very friable.

The R horizon is dominantly Potsdam sandstone or granite, gneiss, and schist and partly dolomite.

Rhinebeck Series

The Rhinebeck series consists of very deep, somewhat poorly drained soils that formed in fine textured, lacustrine deposits on lake plains. Slope ranges from 0 to 15 percent.

Rhinebeck soils are commonly near deep, moderately well drained Hudson soils and poorly drained and very poorly drained Madalin soils on lake plains. They are similar to Hudson soils. Rhinebeck soils are also near moderately deep, somewhat poorly drained Chaumont soils on lake plains underlain with bedrock.

Typical pedon of Rhinebeck silt loam, 0 to 3 percent slopes, in the town of Hounsfield, 0.4 mile south of junction of Youngs Road and New York Route 3, 132 feet west of Youngs Road:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; light grayish brown (10YR 6/2) dry; moderate medium granular structure; friable; many fine fibrous and few medium roots; slightly acid; abrupt smooth boundary.

E—8 to 12 inches; grayish brown (10YR 5/2) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles and few light brownish gray (10YR 6/2) and light gray (10YR 6/1) mottles; weak medium subangular blocky structure parting to weak medium granular; friable; common fine and few medium roots; many fine pores; slightly acid; clear wavy boundary.

Bt1—12 to 18 inches; brown (10YR 4/3) silty clay; many medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse prisms that part to moderate medium subangular blocky structure; firm; sticky and plastic; few fine roots along prism faces; common fine pores lined with clay; some prism faces and most vertical and horizontal faces of peds in lower part have grayish brown (10YR 5/2) skins; upper 2 to 4 inches of prism faces and some ped exteriors show degradation as interfingering of silty, E horizon-like material; slightly acid; clear smooth boundary.

Bt2—18 to 26 inches; grayish brown (10YR 5/2) silty clay; many medium distinct dark yellowish brown (10YR 4/4) mottles; moderate coarse prisms that part to moderate medium angular blocky structure; firm; very sticky and plastic; few fine roots along prism faces in upper part; common medium and few large pores lined with clay; prism faces and both vertical and horizontal faces of peds have gray (10YR 5/1) thick clay skins; neutral; clear wavy boundary.

C—26 to 60 inches; grayish brown (2.5Y 5/2) silty clay varved with silts and very fine sand; common medium to fine olive brown (2.5Y 4/4) and gray (5Y 5/1) mottles; massive; firm; neutral; few small circular bodies of carbonates in places; mildly alkaline below a depth of 36 inches.

The solum ranges from 20 to 48 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments range from 0 to 10 percent throughout. Depth to carbonates range from 20 to 60 inches. Reaction ranges from strongly acid to neutral in the A horizon, from strongly acid to mildly alkaline in the B horizon, and from slightly acid to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. Its texture is silt loam or silty clay loam.

The E horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 3. Its texture is silt loam or silty clay loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its texture is silty clay loam or silty clay, and ranges from 35 to 60 percent clay. Its structure is weak to strong prismatic to subangular or angular blocky. Its consistence is firm or very firm.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is clay or silty clay varved with silt or very fine sand.

Rhinebeck Variant

The Rhinebeck Variant consists of very deep, somewhat poorly drained soils that formed in sluggish stream overflow or slack water deposits along major streams and rivers on flood plains. Slope ranges from 0 to 3 percent.

Rhinebeck Variant soils are commonly near very poorly drained Livingston soils in the areas that are subject to flooding. Rhinebeck Variant soils are not as poorly drained as Livingston soils. They are also near somewhat poorly drained Kingsbury soils and poorly drained Covington soils on lake plains. Unlike Kingsbury and Covington soils, Rhinebeck Variant soils are subject to flooding.

Typical pedon of Rhinebeck Variant silty clay loam, in the town of Brownville, 0.25 mile south of the junction of County Routes 54 and 55, 726 feet northeast of County Route 54:

Ap—0 to 8 inches; dark gray (10YR 4/1) silty clay loam; light brownish gray (10YR 6/2) dry; reddish brown (5YR 4/4) root stains; strong medium to coarse granular structure; firm; mildly alkaline; clear smooth boundary.

Bg1—8 to 19 inches; strong brown (7.5YR 5/6) silty clay loam; few fine distinct dark gray (10YR 4/1) mottles; moderate medium and fine subangular blocky structure; firm; mildly alkaline; abrupt smooth boundary.

Bg2—19 to 21 inches; light brownish gray (10YR 6/2) to grayish brown (10YR 5/2) silty clay loam; few fine distinct brown to dark brown (7.5YR 4/4) mottles; moderate medium and fine subangular blocky structure; firm; mildly alkaline; abrupt smooth boundary.

Bg3—21 to 33 inches; dark gray (10YR 4/1) silty clay loam; faint stainings; moderate medium and coarse angular blocky structure; firm; weak effervescence; mildly alkaline; abrupt smooth boundary.

Cg—33 to 60 inches; dark gray (10YR 4/1) silty clay; few fine faint dark brown (7.5YR 4/4) mottles; lenses of fine sand; massive; firm; strong effervescence; moderately alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to carbonates range from 20 to 60 inches. Depth to bedrock is more than 60 inches. Most pedons do not have rock fragments, but in some pedons they make up as much as 10 percent of the volume. Reaction ranges from strongly acid to mildly alkaline in the A and B horizons and from slightly acid to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 or 2. Its texture is silt loam or silty clay loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 1 to 6. It is mottled. Its texture is silt loam to silty clay. Its structure is moderate medium and fine subangular blocky and medium and coarse angular blocky.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 or 2. Its texture is silty clay to silty clay loam. The horizon is massive, and has thin lenses of fine sand.

Ruse Series

The Ruse series consists of shallow, poorly drained and very poorly drained soils that formed in a thin mantle of glacial till dominated by materials derived from Theresa sandstone, Potsdam sandstone, and some dolomitic rock on upland till plains cored with bedrock.

Bedrock is at a depth of 10 to 20 inches. Slope ranges from 0 to 3 percent.

Ruse soils are commonly near shallow, well drained Insula soils and very shallow, somewhat excessively drained Quetico soils. Ruse soils are similar to Insula soils.

Typical pedon of Ruse gravelly loam, in an area of Ruse gravelly loam, rocky, in the town of Theresa, 520 feet east of the junction of New York Route 26 and George Road, 100 feet northeast of New York Route 26:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly loam; weak medium granular structure; friable; common medium roots; 25 percent coarse fragments, 3 percent more than 3 inches in diameter; moderately acid; clear smooth boundary.

Bw—6 to 16 inches; brown (10YR 5/3) very gravelly sandy loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; few roots, few fine pores; faces of peds are grayish brown (10YR 5/2); 45 percent coarse fragments; slightly acid; clear wavy boundary.

R—16 inches; Theresa sandstone and dolomite.

The thickness of the solum and depth to bedrock range from 10 to 20 inches. Coarse fragments range from 20 to 35 percent in the surface layer and from 35 to 50 percent in the subsoil. Reaction ranges from moderately acid to slightly acid in the A horizon and from slightly acid to mildly alkaline in the B horizon. Some pedons have a thin C horizon.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture is sandy loam to silt loam in the fine earth fraction. In a few pedons, a thin organic layer overlies a mineral surface layer.

The B horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 or 3. It has common to many high chroma and low chroma mottles. Chroma is 2 or less on faces of peds. Texture is sandy loam or fine sandy loam in the fine earth fraction. Structure is weak blocky. Some pedons have prismatic platy structure. Consistence of the horizon is friable or firm.

The underlying bedrock is Theresa sandstone or Potsdam sandstone, and some dolomite.

These soils are a taxajunct to the Ruse series because more rock fragments are in the subsoil than typical for the Ruse series. This difference does not affect use and management.

Saprists

Saprists consist of very deep, very poorly drained, organic soils that formed in black, well decomposed herbaceous and woody plant remnants. These soils are ponded with shallow water for much of the year. They are in low areas or depressions adjacent to Lake Ontario, the St. Lawrence River, the Indian River, and other natural or manmade lakes, ponds, and bodies of open water. Slope is 0 to 1 percent.

Saprists in Jefferson County are commonly in an intricate pattern with Aquents that formed in mineral soil deposits. They are commonly near Canadaigua, Halsey, Granby, and Lamson soils in slightly higher areas, where, in some years, ponding occurs for brief periods in early spring.

The properties of Saprists differ from place to place. Consequently, the soils are named at a level above the series level and a typical pedon is not given.

Saprists have organic soil material more than 16 inches thick that overlies mineral soil or bedrock. Depth to bedrock is generally more than 60 inches. Woody fragments make up from 5 to 15 percent, by volume, of the organic material, but in some pedons they make up as much as 35 percent of the volume of some layers.

The organic soil material has hue of 10YR or 5YR, value of 2 or 3, and chroma of 0 to 2. It is well decomposed woody or herbaceous plant remnants that are less than 15 percent fibers, after rubbing. It is moderately acid to neutral.

The mineral substratum has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 or 2. Its texture ranges from clay to loamy sand that has varying amounts of coarse fragments. Its reaction is neutral to moderately alkaline.

Scarboro Series

The Scarboro series consists of very deep, very poorly drained soils that formed in sandy glaciofluvial deposits. These soils are in pockets and depressions on outwash plains and terraces. Slope ranges from 0 to 3 percent.

Scarboro soils are commonly near moderately well drained Deerfield soils and somewhat poorly drained and poorly drained Wareham soils. Scarboro soils are similar to but are more poorly drained than Deerfield and Wareham soils.

Typical pedon of Scarboro mucky loamy fine sand, in the town of Watertown, 0.5 mile southeast of New York Route 3 and east of Interstate 81, 200 feet east of Interstate 81 at the edge of Beaver Meadows swamp:

Oi—2 inches to 0; partly decomposed plant material.

A—0 to 9 inches; black (5YR 2/1) mucky loamy fine sand, dark gray (10YR 4/1) dry; high in organic matter content; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

Eg—9 to 12 inches; grayish brown (10YR 5/2) loamy fine sand; few micropores filled with black (5Y 2/1) material; few faint brown (7.5YR 5/2) mottles; single grain; loose; few medium roots; strongly acid; clear wavy boundary.

Cg1—12 to 24 inches; dark grayish brown (10YR 4/2) loamy sand; common medium distinct dark reddish brown (5YR 3/4) and black (10YR 2/1) mottles; single grain; loose; few medium roots; 3 percent coarse fragments; strongly acid; clear wavy boundary.

Cg2—24 to 46 inches; dark grayish brown (10YR 4/2) medium and fine sand; few medium distinct dark olive gray (5Y 3/2) and common medium distinct dark yellowish brown (10YR 3/4) mottles; single grain; loose; 5 percent coarse fragments; moderately acid; clear smooth boundary.

Cg3—46 to 60 inches; dark gray (10YR 4/1) medium and fine sand; single grain; loose; 5 percent coarse fragments; moderately acid.

The solum ranges from 10 to 20 inches in thickness. Depth to bedrock is more than 60 inches. Content of coarse fragments ranges from 0 to 10 percent throughout. Reaction ranges from very strongly acid to moderately acid throughout.

The A horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is loamy fine sand to fine sandy loam or their mucky analog. In most pedons a thin, organic horizon is above the A1 horizon.

The E horizon is neutral or has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 0 to 2. It is faintly mottled. Its texture is loamy fine sand, fine sand, or sand.

The C horizon is neutral or has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 0 to 2. Mottles range from none to many and fine to coarse. Texture of the horizon is loamy sand, sand, or fine sand that in some pedons is stratified.

Scriba Series

The Scriba series consists of very deep, somewhat poorly drained soils on uplands. These soils formed in glacial till dominated mostly by gray sandstone material, some red sandstone, and lesser amounts of limestone and shale. Slope ranges from 0 to 8 percent.

Scriba soils are commonly near well drained Sodus soils, moderately well drained Ira soils, and very poorly drained and poorly drained Sun soils. Scriba soils are similar to but are not as well drained as Sodus and Ira soils, and are better drained than Sun soils. Also, unlike Sun soils, Scriba soils have a fragipan horizon.

Typical pedon of Scriba gravelly silt loam, 3 to 8 percent slopes, in the town of Ellisburg, 1,600 feet west of the junction of Hobbs and Staplin Roads, 260 feet north of Staplin Road:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) gravelly silt loam; moderate medium granular structure; friable; many fine fibrous roots; 15 percent coarse fragments; moderately acid; abrupt smooth boundary.

E—7 to 11 inches; grayish brown (10YR 5/2) gravelly silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine roots; 20 percent coarse fragments; moderately acid; abrupt wavy boundary.

Bw—11 to 17 inches; brown (10YR 5/3) gravelly loam; many medium distinct brown (7.5YR 4/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; surfaces of peds are gray (10YR 6/1) silt; 20 percent coarse fragments; moderately acid; clear wavy boundary.

Bx—17 to 27 inches; brown (10YR 4/3) gravelly loam; many medium faint yellowish brown (10YR 5/6) and few medium faint gray (10YR 6/1) mottles; moderate very coarse prismatic structure; very firm; brittle; few fine pores with clay linings within prisms; gray (10YR 5/1) silt coats prism surfaces; prisms separated by 1/4- to 1/2-inch vertically orientated streaks; 20 percent coarse fragments; moderately acid; clear wavy boundary.

C—27 to 60 inches; dark grayish brown (10YR 4/2) very gravelly fine sandy loam; common medium faint dark yellowish brown (10YR 4/4) and light gray (10YR 7/2) mottles; massive; firm; 40 percent coarse fragments; slightly acid.

The solum ranges from 25 to 45 inches in thickness. Depth to carbonates ranges from 36 to 65 inches. Depth to bedrock is generally more than 60 inches. Depth to the fragipan ranges from 12 to 18 inches. Coarse fragments range from 10 to 30 percent in the upper part of the solum and from 20 to 50 percent in the fragipan and the C horizon. Reaction ranges from extremely acid to slightly acid in the upper part of the solum, from strongly acid to neutral in the fragipan, and from strongly acid to moderately alkaline in the C horizon.

The Ap, or A, horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. Its texture is silt loam or loam in the fine earth fraction.

The E horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. Its texture is gravelly loam or silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Its texture is gravelly loam or silt loam.

The Bx horizon has hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 0 to 4. Its texture is gravelly and very gravelly fine sandy loam to silt loam. Its consistence is firm or very firm and brittle.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. Its texture is silt loam to fine sandy loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is firm or friable.

Shaker Series

The Shaker series consists of very deep, poorly drained and somewhat poorly drained soils that formed in a thin mantle of loamy outwash or lacustrine sediments underlain by marine or lacustrine clays. These soils are on lake plains or outwash plains and deltas. Slope ranges from 0 to 3 percent.

Shaker soils are commonly near moderately well drained Elmridge soils and very poorly drained Whately soils on lake plains and outwash plains and deltas. Shaker soils are similar to but are not as well drained as Elmridge soils and are better drained than Whately soils.

Typical pedon of Shaker fine sandy loam, in the town of Brownville, 1.3 miles southeast of the intersection of New York Routes 12E and 180, 40 feet north of New York Route 12E:

Ap1—0 to 7 inches; very dark gray (10YR 3/1) fine sandy loam, dark grayish brown (10YR 4/2) rubbed, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; many fine and few medium roots; strongly acid; clear smooth boundary.

Ap2—7 to 12 inches; very dark gray (10YR 3/1) fine sandy loam, dark grayish brown (10YR 4/2) rubbed; moderate medium granular structure; friable; common fine roots; moderately acid; abrupt smooth boundary.

Eg—12 to 18 inches; pale brown (10YR 6/3) fine sandy loam; common medium faint yellowish brown (10YR 5/8) and common fine distinct reddish brown (5YR 4/3) mottles; weak medium platy structure; friable; few fine roots; moderately acid; common grayish brown (10YR 5/2) 1 to 2 mm wide vertically orientiated streaks; abrupt smooth boundary.

Bg1—18 to 24 inches; grayish brown (10YR 5/2) fine sandy loam; many fine faint yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; moderately acid; clear wavy boundary.

2Bg2—24 to 34 inches; grayish brown (2.5Y 5/2) silty clay loam; 35 to 40 percent clay; common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; slightly acid; clear wavy boundary.

2Cg—34 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; 35 to 40 percent clay; massive; firm; slightly acid; neutral at a depth of 42 inches.

The thickness of the solum and depth to the underlying clayey material is 20 to 40 inches. Bedrock is at a depth of more than 60 inches. Some pedons have a few small pebbles. Reaction ranges from strongly acid to slightly acid in the A and B horizons and from moderately acid to neutral in the C horizon.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 1 or 2. Its texture is fine sandy loam or sandy loam.

The E horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3. Its texture is fine sandy loam or sandy loam. Its structure is weak or moderate medium platy.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2. Its texture is sandy loam, fine sandy loam, or loam.

The 2B horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3. Its texture is silty clay loam, silty clay, or clay. Its structure is weak or moderate fine or medium subangular blocky, or the horizon is massive.

The 2C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 or 3. Its texture is silty clay loam or silty clay, stratified with clay and some very fine sand. Its structure is platy, or the horizon is massive.

Sodus Series

The Sodus series consists of deep, well drained soils on uplands. These soils formed in glacial till derived mainly from gray sandstone and some red sandstone, limestone, and shale. Slope ranges from 3 to 25 percent.

Sodus soils are similar to and commonly near moderately well drained Ira soils, somewhat poorly drained Scriba soils, and very poorly drained and poorly drained Sun soils.

Typical pedon of Sodus gravelly silt loam, 3 to 8 percent slopes, in the town of Ellisburg, 3,400 feet north of the intersection of County Route 90 and U.S. Route 11, 400 feet east of U.S. Route 11:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) gravelly silt loam, light brownish gray (10YR 6/2) dry; medium granular structure; friable; many fibrous roots; 26 percent coarse fragments; strongly acid; gradual wavy boundary.

Bw—8 to 20 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak medium granular structure; friable; many roots; common medium pores; 30 percent coarse fragments; strongly acid; gradual wavy boundary.

E—20 to 22 inches; pale brown (10YR 6/3) gravelly sandy loam; weak thick platy structure; friable; few roots; common fine pores; 30 percent coarse fragments; moderately acid; discontinuous lower boundary.

Bx—22 to 52 inches; brown (10YR 5/3) gravelly sandy loam; weak thick platy structure within very coarse prisms; firm; brittle; few roots along faces of prisms; common fine pores partly lined with clay; prisms separated by light brownish gray (10YR 6/2) interiors and strong brown exteriors; 30 percent coarse fragments; moderately acid; gradual wavy boundary.

C—52 to 60 inches; brown (10YR 5/3) gravelly sandy loam; weak thick platy structure; firm; 35 percent

coarse fragments; slightly effervescent below a depth of 60 inches; slightly acid.

The solum ranges from 40 to 65 inches in thickness. Depth to carbonates ranges from 47 to 94 inches. Depth to the fragipan horizon ranges from 15 to 24 inches. Coarse fragments range from 10 to 30 percent in the upper part of the solum and from 15 to 40 percent in the lower part of the solum, the fragipan horizon, and the substratum. Reaction ranges from strongly acid to neutral in the A horizon if limed, is strongly acid or moderately acid in the E and Bw horizons, and ranges from moderately acid to mildly alkaline in the Bx and C horizons.

The Ap, or A, horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 or 3. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Its texture is gravelly sandy loam or gravelly loam. Its structure is blocky or granular. Its consistence is friable or very friable.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. Its texture is sandy loam or loam. Its structure is weak or platy, or the horizon is massive. Its consistence is friable or firm. Some pedons do not have an E horizon.

The Bx horizon has hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 2 to 4. Its texture is sandy loam, fine sandy loam, or loam in the fine earth fraction. Its structure is weak coarse prismatic or platy, or the horizon is massive. Its consistence is firm or very firm.

The C horizon has hue of 10YR to 2.5YR, value of 4 or 5, and chroma of 2 or 3. Its texture is sandy loam, loam, or fine sandy loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is firm or very firm.

Sun Series

The Sun series consists of very deep, very poorly drained and poorly drained soils that formed mostly in gray sandstone material and partly in red sandstone, limestone, and shale on till plains. Slope ranges from 0 to 3 percent.

Sun soils are commonly near well drained Sodus soils, moderately well drained Ira soils, and somewhat poorly drained Scriba soils. They are similar, except Sun soils do not have a fragipan horizon and are more poorly drained than these soils. Sun soils are near somewhat poorly drained and poorly drained Massena soils. They are more poorly drained than Massena soils.

Typical pedon of Sun silt loam, in the town of Adams, 4,300 feet north of the junction of County Route 69 and Wright Street Road, 500 feet west of Wright Street Road:

Ap—0 to 8 inches; dark gray (10YR 4/1) silt loam; moderate medium granular structure; friable; common fine roots; porous; 5 percent coarse fragments; neutral; abrupt smooth boundary.

Bg1—8 to 16 inches; gray (N 6/0) silt loam; common medium light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; 5 percent coarse fragments; neutral; gradual wavy boundary.

Bg2—16 to 22 inches; brown (10YR 5/3) loam; common medium distinct light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/6); moderate medium subangular blocky structure; firm; few roots; few pores; 10 to 15 percent coarse fragments; neutral; clear wavy boundary.

Cg—22 to 60 inches; grayish brown (2.5Y 5/2) gravelly fine sandy loam; common medium light olive brown (2.5Y 5/4) mottles; massive; firm; 20 to 25 percent coarse fragments; weak effervescence; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Depth to carbonates ranges from 20 to 70 inches. Coarse fragments range from 2 to 35 percent. Reaction ranges from strongly acid to neutral in the A horizon, from moderately acid to neutral in the B horizon, and from neutral to moderately alkaline in the C horizon.

The A, or Ap, horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. Its texture is silt loam or sandy loam in the fine earth fraction.

The B horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 3. It is mottled. Its texture is silt loam, loam, sandy loam, or gravelly fine sandy loam, and silt content decreases with depth. Its structure is moderate subangular blocky, or the horizon is massive. Its consistence is friable or firm.

The C horizon above a depth of 40 inches has matrix colors similar to those of the B horizon. Its texture is fine sandy loam, sandy loam, or loam in the fine earth fraction. Its structure is weak platy, or the horizon is massive. Its consistence is firm or very firm.

Teel Series

The Teel series consists of very deep, moderately well drained and somewhat poorly drained soils. These soils formed in postglacial alluvium derived mainly from siltstone, shale, and limestone on bottom lands or flood plains. Slope ranges from 0 to 3 percent.

Teel soils are similar to and commonly near well drained Hamlin soils and poorly drained and very poorly drained Wayland soils on flood plains.

Typical pedon of Teel silt loam, in the town of Ellisburg, 3,300 feet southeast of the junction of New York Route 3 and North Landing Road, 200 feet south of North Landing Road on the north side of Sandy Creek:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 6/1) dry; moderate fine granular structure; friable; many fine roots; porous; neutral; abrupt smooth boundary.

Bw1—8 to 18 inches; dark grayish brown (10YR 4/2) silt loam, brown (10YR 4/3) rubbed; moderate medium subangular blocky structure; friable; common fine roots; many fine pores; neutral; clear smooth boundary.

Bw2—18 to 30 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct brown (10YR 4/3) and dark brown (10YR 3/3) mottles; moderate medium subangular blocky structure; friable; common fine roots; many fine pores; neutral; clear smooth boundary.

Bw3—30 to 40 inches; dark grayish brown (10YR 4/2) silt loam; common medium distinct dark brown (10YR 3/3) and yellowish red (5YR 4/6) moderate medium subangular blocky structure; friable; few fine roots; common pores; neutral; clear smooth boundary.

C—40 to 60 inches; dark gray (10YR 4/1) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; few fine roots; few pores; mildly alkaline.

The solum ranges from 24 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Depth to carbonates is 40 inches or more. Coarse fragments make up 3 percent or less, by volume, of the solum, and as much as 20 percent of the substratum. Reaction ranges from slightly acid to neutral in the A and B horizons and from slightly acid to mildly alkaline in the C horizon.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or very fine sandy loam.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its texture is silt loam or very fine sandy loam. Its structure is moderate fine or medium subangular blocky. Its consistence is friable.

The C horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 1 or 2. It has common to many mottles. Its texture is silt loam or very fine sandy loam. Its structure is platy, or the horizon is massive.

Udifluvents

Udifluvents consist mostly of very deep, well drained and moderately well drained soils that have a light-colored surface layer. These soils have received deposits under changing currents and through shifting channels. They are commonly called alluvial land. They formed in recent water-laid deposits mainly in nearly level to gently sloping areas on flood plains, fans and deltas of rivers, and creeks and small streams, but not in backswamps where drainage is poor. Slope ranges from 0 to 8 percent.

In many areas Udifluvents are near Fluvaquents that formed in alluvial material derived mainly from transported glacial till, glaciolacustrine deposits, and glaciofluvial deposits. They are commonly near other alluvial soils and marshes on flood plain deposits, and near several other soils on lake plains, outwash plains, and upland till deposits.

Udifluvents differ from place to place. Consequently, a typical pedon is not given.

Depth to bedrock in Udifluvents differs from place to place, but is generally more than 60 inches. Coarse fragments range from about 5 to as much as 70 percent, by volume. Reaction ranges from strongly acid to neutral in the surface layer and from moderately acid to mildly alkaline in the substratum.

The surface layer generally is about 14 inches thick, but in some pedons it ranges to 6 inches thick. It has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. Its texture is silty clay loam to fine sand or sand.

The upper part of the substratum is about 8 inches thick. It has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 5. Its texture is silty clay to sand. The lower part of the substratum to a depth of 60 inches or more is stratified sand and gravel that has alternating thin lenses of silt, some of which have reddish brown, iron oxide coatings. The content of organic matter decreases irregularly with depth.

Udorthents

Udorthents consist of soils that formed in areas that were excavated or filled and in areas that are not subject to flooding and that are along canyons near the western edge of the Tughill Plateau. They are commonly near construction sites and in urban areas, but also along canyon walls. They have little or no profile development. These soils are excessively drained to moderately well drained. Depth to bedrock and soil texture are quite variable. Slope ranges from 0 to 80 percent.

Udorthents are highly variable; consequently, a typical pedon is not given.

These soils consist of an A horizon 1 to 12 inches thick. There is no A horizon in some areas where excavations are freshly exposed or where fill has been recently deposited. Depth to bedrock is generally more than 60 inches in areas that have been excavated or filled, and rock outcrops are common along canyon walls. Coarse fragments, including gravel and cobblestones, range from 0 to 40 percent, by volume, in individual horizons. Reaction ranges from strongly acid to mildly alklaine.

The A horizon dominantly has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4. Its texture is variable, ranging from sand to silty clay loam and their

gravelly or very gravelly analogs. Some pedons do not have an A horizon.

The C horizon is neutral or has hue of 10YR to 5Y, value of 2 to 6, and chroma of 0 to 6. Its texture ranges from sand to silty clay and their gravelly, cobbly, or very gravelly analogs. Its structure is very weak, or the horizon is structureless. Its consistence is friable to very firm, depending on the degree of soil compaction and the soil texture.

Vergennes Series

The Vergennes series consists of very deep, moderately well drained soils. These soils formed in glaciolacustrine or marine deposits that consist of calcareous clays that are very low in silt and very fine sand on lake plains. Slope ranges from 3 to 15 percent.

Vergenne soils are commonly near somewhat poorly drained Kingsbury soils, poorly drained Covington soils, and very poorly drained Livingston soils on lake plains.

Typical pedon of Vergennes silty clay loam, 3 to 8 percent slopes, in the town of Lyme, 0.1 mile southwest of the intersection of County Routes 8 and 5, 125 feet east of County Route 5:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine granular structure; friable; plastic and sticky; many fine roots; many fine pores; very strongly acid; abrupt smooth boundary.

Bw—8 to 12 inches; dark brown (10YR 4/3) clay; common fine distinct strong brown (7.5YR 5/6) and 30 percent many fine and medium faint yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate very fine subangular blocky structure; firm; plastic and sticky; common fine and very fine roots; few fine pores; occasional grayish brown (10YR 5/2) depressions in surface of peds; very strongly acid; clear smooth boundary.

Bt1—12 to 17 inches; dark brown (10YR 4/3) clay; 30 percent many medium faint grayish brown (10YR 5/2) mottles; coarse prismatic structure parting to moderate fine and very fine angular blocky; firm; very plastic and very sticky; few fine roots; common fine pores; continuous clay films on surface of peds and in pores; moderately acid; clear wavy boundary.

Bt2—17 to 29 inches; dark grayish brown (10YR 4/2) clay; few fine faint grayish brown (10YR 5/2) and common (20 percent) fine and medium faint brown (10YR 5/3 and 4/3) and few fine faint yellowish brown (10YR 5/6) mottles; moderate medium and coarse subangular blocky structure parting to moderate fine and very fine angular blocky; firm; very plastic and very sticky; few fine roots; common fine tubular pores; thin nearly continuous clay films on surface of peds and in pores; neutral; gradual smooth boundary.

C—29 to 72 inches; gray (10YR 5/1) and light brownish gray (10YR 6/2) clay varved with silt; massive; firm; very plastic and very sticky; few fine roots; light gray (10YR 7/2) concretions or secondary lime deposits; weak effervescence; moderately alkaline.

The thickness of the solum and depth to carbonates range from 15 to 30 inches. Depth to bedrock is more than 60 inches. Most pedons do not have rock fragments, but in some pedons they make up as much as 2 percent of the solum and the substratum. Reaction ranges from very strongly acid to neutral in the A horizon and the upper part of the B horizon, from slightly acid to neutral in the lower part of the B horizon, and from neutral to moderately alkaline in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 or 2. Its texture is silty clay loam, silty clay, or clay.

Some pedons have an E horizon that has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or 3. Its texture is clay or silty clay.

The B horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 1 to 3. Its structure is very fine or fine angular blocky within coarse prisms. Its consistence is firm or very firm.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 3. Its texture is clay that is varved with silt. The horizon is massive.

These soils are a taxadjunct to the Vergennes series because the Ap and Bw horizons are very strongly acid and the upper part of the Bt horizon does not have interfingering. These differences do not significantly affect use and management of the soils.

Wareham Series

The Wareham series consists of very deep, somewhat poorly drained and poorly drained sandy soils that formed in sandy glaciofluvial material on outwash plains and deltas. Slope ranges from 0 to 3 percent.

Wareham soils are commonly near excessively drained Windsor soils, moderately well drained Deerfield soils, and very poorly drained Scarboro soils. Wareham soils are similar to but are poorer drained than Windsor and Deerfield soils and better drained than Scarboro soils.

Typical pedon of Wareham loamy fine sand, in the town of Watertown, in Beaver Meadows just south of New York Route 3 and east of Interstate 81:

A—0 to 5 inches; black (10YR 2/1) loamy fine sand, gray (10YR 5/1) dry; weak medium and fine granular structure; very friable; many fine roots in the upper 2 inches; strongly acid; clear smooth boundary.

Bw—5 to 24 inches; grayish brown (10YR 5/2) loamy sand; common medium prominent dark reddish brown (5YR 3/4) and common medium faint light brownish gray (10YR 6/2) mottles; single grain; loose; few medium roots; strongly acid; clear wavy boundary.

C—24 to 60 inches; dark grayish brown (10YR 4/2) sand; common medium prominent dark reddish brown (5YR 3/3), yellowish brown (10YR 5/4), and common medium faint dark gray (10YR 4/1) mottles; single grain; loose; strongly acid.

The solum ranges from 15 to 30 inches in thickness. Depth to bedrock is more than 60 inches. Reaction commonly ranges from extremely acid to slightly acid. Generally, most pedons do not have rock fragments, but in some pedons they make up as much as 15 percent of the volume.

The Ap, or A, horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is loamy fine sand or sand.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4. Its texture is loamy fine sand, loamy sand, fine sand, or sand.

The C horizon is neutral or has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 3. Its texture is sand, fine sand, or loamy fine sand.

Wayland Series

The Wayland series consists of very deep, poorly drained and very poorly drained soils that formed in recent alluvium derived mainly from siltstone, shale, and limestone. These soils are on flood plains along major streams or rivers. Slope ranges from 0 to 3 percent.

Wayland soils are commonly near well drained Hamlin soils and moderately well drained and somewhat poorly drained Teel soils. Wayland soils are also near moderately well drained and somewhat poorly drained Pootatuck soils. They are siltier than Pootatuck soils.

Typical pedon of Wayland silt loam, in the town of Ellisburg, 3,200 feet southwest of the junction of New York Route 3 and South Landing Road, 100 feet southeast of Sandy Creek:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam rubbed, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; few large and many medium roots; neutral; clear smooth boundary.

Bw1—6 to 11 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine pores; neutral; clear smooth boundary.

Bw2—11 to 18 inches; very dark gray (10YR 3/1) silt loam; very dark grayish brown (10YR 3/2) rubbed; common fine prominent reddish brown (5YR 4/4) mottles line old root channels; weak fine subangular blocky structure; friable; few fine roots; common fine pores; mildly alkaline; clear wavy boundary.

BC—18 to 30 inches; very dark grayish brown (10YR 3/2) silt loam; very dark gray (10YR 3/1) silt coats on 20 percent of vertical surface of peds; common medium prominent dark reddish brown (5YR 3/4) mottles; weak fine subangular blocky structure; friable; few fine roots; few fine pores; weakly calcareous at a depth of about 24 inches; mildly alkaline; clear smooth boundary.

C—30 to 60 inches; very dark gray (10YR 3/1) silty clay loam; medium fine distinct dark brown (7.5YR 4/4) mottles; massive; friable; weak effervescence; mildly alkaline.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Depth to carbonates ranges from 24 to 30 inches. Coarse fragments commonly make up less than 5 percent, by volume, of the solum and as much as 10 percent of the substratum. Reaction ranges from strongly acid to mildly alkaline in the A and B horizons and from moderately acid to moderately alkaline in the C horizon.

The Ap, or A, horizon is neutral or has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture is silt loam or silty clay loam.

The B horizon is neutral or has hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 0 to 2. Its texture is silt loam or silty clay loam. Its structure is weak fine or medium subangular blocky.

The C horizon is neutral or has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 0 to 2. Its texture is silt loam or silty clay loam.

Whately Series

The Whately series consists of very deep, very poorly drained soils that formed in loamy deposits and the underlying lacustrine or marine deposits on lake plains. Slope ranges from 0 to 3 percent.

Whately soils are commonly near moderately well drained Elmridge soils and somewhat poorly drained Shaker soils. Whatley soils are similar to but are more poorly drained than these other soils.

Typical pedon of Whately fine sandy loam, in the town of Hounsfield, 0.7 mile south of the intersection of County Routes 62 and 66, 50 feet east of County Route 66:

Oa—0 to 2 inches; black (5Y 2/1) muck; less than 10 percent mineral; massive; friable; many fine roots; slightly acid; abrupt smooth boundary.

A—2 to 6 inches; black (5Y 2/1) fine sandy loam; weak medium granular structure; friable; common fine few medium and large roots; slightly acid; clear wavy boundary.

Bg1—6 to 18 inches; olive gray (5Y 4/2) sandy loam; common medium prominent grayish brown (10YR 5/2) and brown (10YR 5/3) mottles; moderate medium subangular blocky structure; friable; common fine few medium and large roots; slightly acid; gradual wavy boundary.

2Bg2—18 to 30 inches; greenish gray (5GY 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) and common medium prominent yellowish red (5YR 4/6) mottles; strong medium subangular blocky structure; friable; sticky and plastic; few fine roots; common fine and few medium pores partially lined with silt or clay; neutral; clear smooth boundary.

2Cg—30 to 60 inches; gray (5Y 5/1) silty clay loam; common medium prominent yellowish brown (10YR 5/4) mottles; massive; firm; sticky and plastic; neutral.

Depth to contrasting layers ranges from 18 to 40 inches. Depth to bedrock is more than 60 inches. Coarse fragments make up less than 1 percent of the volume throughout. Carbonates are commonly more than 40 inches. Clay content averages less than 18 percent between the A horizon and any lithologic discontinuity. Reaction is moderately acid or slightly acid in the A horizon and slightly acid or neutral below that horizon, and commonly increases with depth.

The A horizon has hue of 5Y to 10YR, value of 2 or 3, and chroma of 1 or 2. Its texture is very fine sandy loam to sandy loam. This horizon is high in organic material.

The B horizon is neutral or has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 0 to 2. Texture in the B horizon is fine sandy loam or sandy loam.

The 2B horizon is neutral or has hue of 2.5Y or 5GY, value of 4 to 6, and chroma of 0 to 2. Its texture is silty clay loam, silty clay, or clay. Its structure is moderate or strong subangular blocky.

The 2C horizon is similar in color and texture to the 2B horizons. It is massive.

Willette Series

The Willette series consists of very poorly drained soils that formed in deposits of organic material 16 to 51 inches thick over clay in bogs and depressions on lake plains and till plains. Slope ranges from 0 to 3 percent.

Willette soils are commonly near very deep, very poorly drained Carlisle soils and moderately deep, very poorly drained Palms soils in bogs and depressions. Willette soils overlie clayey material, and Palms soils overlie loamy material.

Typical pedon of Willette muck, in the town of Lyme, 1.1 miles northeast of New York Route 12E along the Cape Vincent-Lyme town line:

Oa1—0 to 15 inches; black (10YR 2/1) on broken face, rubbed, and pressed muck (sapric material); moderate medium granular structure; friable; many roots; about 2 percent fibers when undisturbed; moderately acid; clear smooth boundary.

Oa2—15 to 37 inches; black (10YR 2/1) on broken face, dark brown (7.5YR 3/2) rubbed and pressed muck (sapric material); weak thick platy structure; friable; nonsticky; about 10 percent fibers, 3 percent rubbed; slightly acid; clear smooth boundary.

Oa3—37 to 42 inches; dark brown (10YR 3/3) rubbed and pressed muck (sapric material); weak thick platy structure; friable; nonsticky and slightly plastic; common to few roots; about 12 percent fibers, 3 percent rubbed; slightly acid; clear smooth boundary.

2Cg—42 to 60 inches; gray (N 6/0) silty clay; massive; sticky and plastic; mildly alkaline; strong effervescence.

Depth to the clayey 2C horizon ranges from 16 to 50 inches. The fiber is mostly from herbaceous plants and partly from some woody material. Some pedons have thin layers of hemic or fibric material, but it makes up less than 10 inches of the combined thickness of the surface and subsurface tiers. In some pedons woody coarse fragments, consisting of twigs, stems, and some logs, make up 5 to 20 percent, by volume, of the total control section above the clayey 2C horizon. Reaction ranges from moderately acid to mildly alkaline in the organic material and is mildly alkaline or moderately alkaline in the 2C horizon. Some pedons have carbonates in the organic material just above the 2C horizon.

The surface tier is neutral or has hue of 10YR or 2.5Y, value of 2, and chroma of 0 to 2 on broken face and rubbed material. Its structure is weak or moderate fine or medium granular. The subsurface and bottom tiers have hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 to 3 on broken face and rubbed material. Their structure is weak thin or thick platy, or weak medium or coarse blocky, or the tiers are massive. In some pedons the organic layer just above the 2C horizon is as much as 35 percent, by volume, mineral material.

The 2C horizon is neutral or has hue of 10YR, value of 4 to 6, and chroma of 0 to 2. Its texture ranges from silty clay to clay, and clay content averages more than 35 percent. Reaction is slightly alkaline or moderately alkaline. In most pedons effervescence is slight or strong.

Williamson Series

The Williamson series consists of very deep, moderately well drained soils that formed in wind- or water-deposited silt and very fine sand on lake plains and near the margins of lake plains. Slope ranges from 3 to 8 percent.

Williamson soils are commonly near well drained Arkport soils on the flanks of deltas and excessively drained Windsor soils on terraces, deltas, and plains. Williamson soils have a fragipan horizon and are not as sandy as Arkport and Windsor soils. Williamson soils are also near moderately well drained, silty Collamer soils on lake plains.

Typical pedon of Williamson silt loam, 3 to 8 percent slopes, in the town of Champion, 1.6 miles southeast of the hamlet of Felts Mills and New York Route 3 along County Route 143, 2,000 feet south of County Route 143:

Ap—0 to 8 inches; dark brown (7.5YR 3/2) silt loam; moderate medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw—8 to 13 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; slightly acid; abrupt wavy boundary.

E—13 to 18 inches; brown (10YR 5/3) silt loam; common medium faint yellowish brown (10YR 5/6) mottles; weak thin platy structure; friable; common fine roots; many large and medium pores; moderately acid; clear smooth boundary.

Bx—18 to 42 inches; dark brown (10YR 4/3) silt loam; common medium distinct brown (7.5YR 4/4) mottles; weak medium platy structure in strong coarse prisms that measure 3 to 6 inches across; very firm; brittle; prisms separated by vertical streaks that are three-quarters of an inch thick and that have light gray (2.5Y 7/2) interiors and yellowish brown (10YR 5/6) exteriors; very fine sandy loam; common medium faint dark yellowish brown (10YR 4/4) mottles on outer rims of streaks; many large and medium pores; silt or clay flows, or both, in pores; moderately acid; gradual wavy boundary.

C—42 to 60 inches; dark grayish brown (2.5Y 4/2) stratified silt loam and very fine sand; common medium distinct dark yellowish brown mottles; moderate thick platy structure; firm; surface of plates coated with very dark grayish brown (2.5Y 3/2); pockets of light brownish gray (2.5Y 6/2) sand; moderately acid.

The solum ranges from 40 to 60 inches in thickness. Depth to bedrock is more than 60 inches. Depth to the fragipan horizon ranges from 15 to 24 inches. Depth to carbonates is more than 60 inches. Most pedons do not have coarse fragments above the fragipan horizon, but in some pedons a few pebbles and stones are in the fragipan horizon and the substratum. Reaction ranges from very strongly acid to moderately acid.

The Ap, or A, horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2. Its texture is silt loam or very fine sandy loam.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Its texture is silt loam or very fine sandy loam. Its structure is subangular blocky or granular. Its consistence is very friable or friable.

The E horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 or 4. It has common high chroma mottles. Its texture is silt loam or very fine sandy loam. Its structure is thin platy, or the horizon is massive. Its consistence is friable or firm.

The Bx horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. It has common mottles. Its texture is silt loam or very fine sandy loam. Its structure is prismatic or platy, or the horizon is massive. Its consistence is firm or very firm.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is stratified silt loam and very fine sand. Its structure is platy, or the horizon is massive.

Wilpoint Series

The Wilpoint series consists of moderately deep, moderately well drained soils that formed in clayey, lacustrine sediments on lake plains cored with bedrock. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 3 to 15 percent.

Wilpoint soils are commonly near moderately deep, somewhat poorly drained Chaumont soils and poorly drained and very poorly drained Guffin soils on lake plains cored with bedrock. They are similar to but are better drained than these soils.

Typical pedon of Wilpoint silty clay loam, 3 to 8 percent slopes, in the town of Cape Vincent, 100 feet south of the intersection of Pleasant Valley and Wilson Point Roads:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silty clay loam; strong medium granular structure; friable; hard; many fine roots; slightly acid; abrupt smooth boundary.

Bt1—6 to 9 inches; dark brown (10YR 4/3) silty clay; common medium faint dark yellowish brown (10YR 4/4) mottles; moderate coarse subangular blocky structure; firm; slightly sticky and plastic; common fine roots; common large and medium pores with clay linings; thin brown (10YR 5/3) coating on faces of peds; slightly acid; clear smooth boundary.

Bt2—9 to 15 inches; dark brown (10YR 4/3) clay; common fine distinct dark yellowish brown (10YR 4/4) and light brownish gray (10YR 6/2) mottles; moderate coarse prisms parting to moderate medium subangular blocky structure; firm; sticky and plastic; common fine roots; many fine and medium pores with clay linings; thick continuous clay skins on faces of peds; slightly acid; clear wavy boundary.

Bt3—15 to 22 inches; dark grayish brown (2.5Y 4/2) clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate coarse prisms parting to weak fine blocky structure; firm; sticky and plastic; few fine roots; common medium and large pores with clay linings; thick continuous clay skins on faces of peds; weakly calcareous in lower part; mildly alkaline; clear smooth boundary.

C—22 to 29 inches; dark gray (10YR 4/1) clay; common medium distinct brown (7.5YR 4/4) mottles; massive; firm; sticky and slightly plastic; common

fine and medium pores; common light gray (10YR 7/1) lime streaks; strong effervescence; moderately alkaline; abrupt smooth boundary.
2R—29 inches; massive, level-bedded, limestone bedrock.

The solum ranges from 18 to 36 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. In most pedons coarse fragments are not in the A and B horizons, but in some pedons they make up as much as 5 percent of the volume. Reaction ranges from moderately acid to neutral in the A horizon and the upper part of the Bt horizon and from neutral to moderately alkaline in the lower part of the Bt horizon and in the C horizon. The C horizon contains free carbonates.

The A, or Ap, horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silty clay loam or silty clay.

The Bt horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is mottled. Its matrix chroma of 2 is lithochromic and not indicative of wetness. Its texture is clay that has thin, silty clay subhorizons where clay content averages 60 percent or more.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3. Its texture is clay or silty clay.

Windsor Series

The Windsor series consists of very deep, excessively drained soils that formed in poorly graded loamy sand and sand derived mainly from crystalline rocks. Slope ranges from 0 to 15 percent.

Windsor soils are commonly near moderately well drained Deerfield soils and well drained Agawam soils. Windsor soils are sandier than Agawam soils.

Typical pedon of Windsor loamy fine sand, 0 to 8 percent slopes, in the town of LeRoy, 0.4 mile west of the main gate of Fort Drum on Pearl Street Road, 100 feet north of road:

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy fine sand; weak medium granular structure; very friable; common fine roots; very strongly acid; abrupt smooth boundary.
Bw1—5 to 11 inches; strong brown (7.5YR 5/6) loamy fine sand; single grain; loose; few fine roots; very strongly acid; clear smooth boundary.
Bw2—11 to 21 inches; yellowish brown (10YR 5/6) loamy fine sand; single grain; loose; few fine roots; very strongly acid; clear wavy boundary.
Bw3—21 to 28 inches; brownish yellow (10YR 6/6) loamy sand; single grain; loose; moderately acid; clear wavy boundary.
C—28 to 60 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; moderately acid.

The solum ranges from 20 to 32 inches in thickness. Bedrock is at a depth of more than 60 inches. Rock fragments range to 10 percent, by volume, in the solum and to 15 percent in the C horizon. Some pedons have thin strata of pebbles. Reaction ranges from very strongly acid to moderately acid in the A and B horizons and from very strongly acid to slightly acid in the C horizon. Some pedons have a thin, O1 or O2 horizon.

The Ap, or A, horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Its texture is loamy fine sand or loamy sand.

The B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 6. Its texture is loamy fine sand, loamy sand, or sand. Its structure is weak subangular blocky or granular, or the horizon is massive or single grain. Its consistence is very friable or loose.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 6. Its texture is sand or fine sand.

Formation of the Soils

This section discusses the active and passive factors of soil formation and relates them to the formation of soils in the survey area.

Factors of Soil Formation

The soil is defined as earthy materials on land surfaces that support or are capable of supporting land plants, such as mosses, trees, shrubs, and grasses. Soil is formed through the process or interaction of five major factors: climate, plant and animal life, parent material, relief, and time (*7*). The relative influence of each of these factors varies from place to place, and in some places, one or two factors dominate over the other factors in determining the formation and properties of a soil. The following is a discussion of these five soil-forming factors.

Climate

The climate, particularly temperature and precipitation, determines to a large extent the weathering of the soil. It influences kind and affects growth rates of vegetation and the leaching and translocation of weathered minerals within the soil.

In Jefferson County the climate is the humid-continental type. Lake Ontario is a major influence on the weather and climate of the area. The lake tends to moderate temperature, and thus extends the length of the freeze-free season and reduces the extremes of cold in winter and heat in summer in nearby areas. The lake is relatively cool and suppresses precipitation during the warm months. In late fall and winter the unfrozen lake contributes moisture to the cold air, which is then frequently deposited as heavy snows, especially on the slopes of the Tughill Plateau.

The climatic conditions prevailing in different parts of the county are somewhat variable. The mean annual temperature differs little, except for the Tughill Plateau and the Adirondack uplands, where it is a few degrees lower. For more detailed information on climate, see the section "General Nature of the County."

Plant and Animal Life

Living organisms, including vegetation, animals, bacteria, and fungi, are factors in the formation of soils. Vegetation generally contributes organic matter and some nutrients to the soil. Dark colored soil horizons generally indicate that the soil is rich in humus or organic matter. Many of the trees and herbaceous plants take up plant nutrients from the soil and store them in their roots, stems, and leaves. When the plants die, the nutrients are again returned to the soil, and so the cycle continues. Bacteria and fungi transforms plant material into organic matter and nutrients for many of the organic reactions involved in the processes of soil formation. Earthworms, ants, cicadas, and burrowing animals mix the soil, affect soil structure, and generally make the soil more permeable to water and air.

In Jefferson County the activities of man have influenced changes in the soil. Clearing forests and cultivation have accelerated erosion. Applying lime and fertilizers to the soil have added nutrients. Plowing has mixed some horizons. Erosion has been accelerated in areas that are not properly managed. Draining wet areas has changed the environment and thus the soil-forming processes of wet soils.

Parent Material

Parent material is the unconsolidated earthly mass in which soils form. It determines the mineral and chemical composition of the soil, to a large extent the rate of soil formation, and the color of the soil.

In Jefferson County the soils formed in glacial till, glaciofluvial deposits (outwash), glaciolacustrine and marine sediments, recent stream alluvium, and organic material.

Table 19 shows the relationship between parent material, landscape, position, and drainage for the soils in Jefferson County. First, the soils are grouped based on location on the landscape and depth to bedrock (very deep, deep, etc.). The soils are on till plains, outwash plains, terraces, and deltas; lacustrine plains; flood plains; and swamps and bogs. The soils are further categorized based on the texture and morphology of the parent material in which they formed. Finally, the soils are placed in the proper drainage class. Soils that have the same parent material and soil depth, and that are on the same type of landscape but that differ in drainage class, form a drainage catena. Sodus, Ira, and Scriba soils, for example, form a drainage catena. Some soils, such as Haights soils, are in two drainage classes and consequently appear twice on the table.

Table 19 establishes general relationships between the soils in the county. It supplements the sections

"Formation of the Soils" and "Engineering Properties of Geologic Deposits." The morphology and character of the soils are described in the section "Soil Series and Their Morphology."

Soils that formed in glacial till are the most extensive and have a wide range in characteristics. They are very deep, moderately deep, shallow, and very shallow to bedrock and range from very acid to moderately alkaline. Most of the till soils formed in earthly materials derived from sandstone, granite, shale, and limestone bedrock. Some till deposits have eolian or silty surficial deposits. Pinckney soils, for example, formed in till deposits and are in these areas. Danley soils formed mainly in shaly deposits. Madrid soils are examples of soils that formed in medium and high lime tills derived mainly from limestone and some crystalline materials. Chatfield soils, for example, formed mainly in acid, granitic, till deposits and Lowville soils formed in till-derived soils that have eolian or silty surficial deposits.

Soils that formed in glaciofluvial deposits and other water-sorted sediments, for example, Alton and Bonaparte soils, are on terraces, kames, and eskers. Also, Plainfield soils are examples of soils that formed in deltaic deposits.

Soils that formed in glaciolacustrine and marine sediments are on lake plains. They are very deep and moderately deep over bedrock. Fine textured Hudson and Rhinebeck soils formed in lacustrine deposits. Vergennes and Kingsbury soils, for example, formed in marine sediments. Also in this category, Chaumont soils overlie hard bedrock and Claverack soils have sandy surficial sediments over clayey sediments.

Soils on flood plains formed in stream deposits or recent alluvium. Their texture is medium, moderately coarse, and fine. These soils have minimum profile development. Some examples of these soils are Hamlin and Rhinebeck Variant soils.

Soils that formed in organic material are mostly very deep Carlisle soils in lowland areas and very deep Carbondale soils in the Tughill area. Palms soils have moderately deep organic material over loamy material. Willette soils have moderately deep organic material over clayey sediments.

Relief

The shape of the land surface, slope, and the position of the land surface in relation to the water table have influenced the formation of soils in the county. The soils that formed in convex, sloping areas where little runoff accumulates or where the rate of runoff is medium or rapid, generally are well drained and have a bright-colored, unmottled subsoil. These soils, such as Nellis soils, are generally leached to a greater depth than the low-lying, wetter soils, such as Sun soils, in the same general area. In less sloping areas, where runoff is slower, the soils generally exhibit some evidence of wetness, such as mottling in the subsoil. In level areas or depressions where the water table is at or near the surface for long periods, the soils have a dark colored surface layer and a very strongly mottled or grayish subsoil. Permeability of the soil and length, gradient, and configuration of the slope influence the kind of soil that forms in a particular place.

Time

Time is a passive, but important, soil-forming factor. In geologic terms, the deposits in which soils formed in Jefferson County are relatively young. Most of the parent material was deposited after the last glacier retreated, 10,000 to 16,000 years ago. All the soils, however, have not reached the same stage of profile development or maturity. The degree of profile development reflects not only the age of a soil but also the influence of the other soil-forming factors. Hudson soils appear to be younger than Manlius and Bice soils because of a difference in parent material. The three soils have well-defined horizons, however. An immature soil has not had enough time for distinct horizons to form. Teel soils, for example, have been forming in alluvial sediments on flood plains. They are immature because of periodic deposition of fresh alluvium, and have weak horizon development.

Engineering Properties of Geologic Deposits

Edward A. Fernau, soils engineer, New York State Department of Transportation, Soil Mechanics Bureau, helped prepare this section.

The engineering properties of the various, unconsolidated, geologic deposits in Jefferson County and their relation to the soils are discussed in this section. This discussion should be helpful to planners, designers, engineers, contractors, and others working on construction projects involving earthy materials. Note that soil engineering terms do not always have the same meaning as similar soil science terms.

The geologic deposits in Jefferson County are described according to their mode of deposition. The deposits are glacial till, outwash, ice-contact, delta, beach ridge, lacustrine, alluvial, and organic. The engineering properties of each deposit is determined mainly by the texture of the material and the internal structure of the landform. They are also determined by the position of the deposit on the landscape and depth of the water table. In Jefferson County the geologic deposits are divided into the following categories: deep till deposits, shallow-to-rock deposits, stratified coarse textured deposits, stratified fine textured deposits, and organic deposits.

Deep till deposits are unstratified, highly varied mixtures of all particle sizes ranging from rock fragments to clay. This material was scoured and transported from nearby sources by glacial ice and deposited as ground moraines or end moraines. Bedrock is generally more

than 5 feet below the soil surface, but in some small areas depth to rock is less or there are a few rock outcrops. The individual rock and mineral fragments in the soil generally are the same as the types of bedrock in the immediate area.

Amenia, Bice, Bombay, Danley, Darien, Ensley, Ira, Lowville, Madrid, Massena, Pinckney, Sodus, and Sun soils formed in these deposits.

These soils are the most dense and compact of the unconsolidated deposits of the county. Most of the tills have been subjected to the compactive weight of overriding ice. Deep till soils are on slopes ranging from nearly level to very steep, and most are level or gently sloping. In most construction many landscapes require cutting and filling. The soils generally provide stable, relatively incompressible foundations for engineering works. Fill material from these deposits, if properly compacted, generally provides stable embankments. Steep cutbanks commonly are subject to surface sloughing and erosion. Ensley and Sun soils are subject to ponding.

Shallow-to-rock deposits are a veneer over bedrock. The soil is generally 6 to 48 inches thick, and some areas have rock outcrops. The landforms and topography are generally bedrock controlled.

Allis, Angola, Manlius, and Nassau soils formed in these deposits over shale. Hollis, Insula, and Millsite soils formed in glacial till over granitic bedrock and Quetico soils formed in glacial till over sandstone bedrock. Galoo and Galway soils formed in glacial till over limestone bedrock.

Chaumont; Collamer, bedrock substratum; Guffin; Niagara, bedrock substratum; and Wilpoint soils formed in stratified, fine grained deposits over limestone bedrock. Groton Variant formed in stratified, coarse grained material over limestone bedrock.

The primary engineering concerns relate to the underlying bedrock and ground water conditions. Other engineering concerns are similar to those described for the overlying material. Ruse soils are subject to ponding. Fill material is limited in quantity because of the closeness of bedrock.

Stratified coarse textured deposits are materials dominated by gravel and sand sorted by glacial melt water into layered or stratified deposits and the coarser materials deposited by fluvial action. These materials are outwash plains and terraces, ice-contact kames and eskers, beach ridges, and the coarser parts of deltas, lacustrine beaches, and flood plains. The strata within these deposits may be well sorted or poorly sorted and may be of particle sizes from cobbles to silt. The deposits are generally loose and porous, moderately rapidly or rapidly permeable.

Agawam, Alton, Bonaparte, Groton, Halsey, Hinckley, Hoosic, and Phelps soils formed in gravelly outwash plains and terraces, beach ridges, kames, eskers, and deltas. Arkport, Deerfield, Galen, Granby, Junius, Lamson, Minoa, Plainfield, Scarboro, Wareham, and Windsor soils and Beaches formed in the sandier parts of deltas and terraces. Blasdell, Gulf, Haights, and Lagross soils formed in silty material that is underlain by coarse textured materials. Pootatuck soils formed in sandy deposits on flood plains.

Coarse textured deposits generally have relatively high strengths. They are loose and porous; consequently, most of these deposits are not highly erodible, but are subject to settlement if vibrated. Pootatuck soils are subject to common flooding, and Granby, Lamson, and Scarboro soils are subject to ponding.

These gravel and sand deposits have many uses as a construction material. Depending on gradation, soundness, and plasticity, they may be used as fill material for highway embankments and for parking areas and developments and as fill material to decrease stress on underlying soils to allow progress of construction operations. They may also be used as a subbase for pavements, wearing surfaces for driveways, parking lots, and some roads, material for highway shoulders, and free draining backfill for structures and pipes. In addition, these deposits may be used as outside shells of dams to impound water, slope protection blankets to drain and help stabilize wet, cut slopes, and sources of sand and gravel for general use.

Stratified fine textured deposits consist mainly of lacustrine, fine grained sediments transported by glacial melt water and deposited in quiet, proglacial lakes and ponds. In some places they are flood plain soils on more recent, slack water deposits. Some soils have distinct layers or laminations generally of silt- and clay-sized particles.

Covington, Heuvelton, Hudson, Kingsbury, Livingston, Madalin, Muskellunge, Rhinebeck, and Vergennes soils formed in deep, lake-laid, silt and clay deposits. Canandaigua, Collamer, Niagara, and Williamson soils formed in deep, silty areas on deltas. Claverack, Elmridge, Shaker, and Whately soils formed in a coarse textured veneer over fine textured material. Hamlin, Rhinebeck, Teel, and Wayland soils are on alluvial flood plains.

Because of their fine texture and high moisture content, these deposits have relatively low strength. They are generally highly compressible, and may settle over long periods. In some areas the soils have a high fine sand and silt content, are less compressible, but are highly erodible and frost susceptible. Alluvial soils are subject to flooding, and Whatley soils are subject to ponding.

The fine textured deposits are difficult to use for engineering works, especially where the soils are on flat surfaces, are wet, and are subject to ponding. Whatley soils are an example. Onsite investigation is needed on sites for embankments and heavy structures or buildings to determine strength and settlement characteristics and the effects of ground water.

Organic deposits are mostly accumulations of plant remains. In places they include a minimal amount of mineral soil. They are in very poorly drained depressions and bogs that are covered by water during most of the year. Boots, Carbondale, Carlisle, Palms, and Willette soils, Saprists, and Aquents formed in organic material.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Congeliturbate. Soil material disturbed by frost action.

Conservation tillage. A tillage and planting system in which crop residue covers at least 30 percent of the soil surface after planting. Where soil erosion by wind is the main concern, the system leaves the equivalent of at least 1,000 pounds per acre of flat small-grain residue on the surface during the critical erosion period.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the

activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of Vertisols—clayey soils having a high coefficient of expansion and contraction with changes in moisture content.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not

prominently flattened, up to 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake in inches per hour is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low

0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, invader plants follow disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Narrow-base terrace. A terrace no more than 4 to 8 feet wide at the base. A narrow-base terrace is similar to a broad-base terrace, except for the width of the ridge and channel.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial meltwater.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (soil science). Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial

ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terminal moraine. A belt of thick glacial drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, are in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer of a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-79 at Watertown, New York)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	27.7	8.9	16.3	57	-23	9	3.23	2.31	4.07	11	29.0
February---	29.8	11.0	20.4	56	-23	0	2.65	1.59	3.59	8	19.6
March------	39.5	22.6	31.1	68	-4	29	2.70	1.42	3.80	8	13.3
April------	53.3	35.0	44.2	81	15	165	3.21	2.24	4.09	9	3.7
May--------	64.9	45.7	55.3	86	28	474	3.45	2.10	4.65	8	.2
June-------	74.8	55.9	65.4	90	37	762	3.20	1.52	4.64	7	.0
July-------	79.8	60.5	70.2	93	45	936	3.05	1.46	4.41	7	.0
August-----	77.8	58.9	68.4	91	42	880	3.73	2.19	5.09	7	.0
September--	70.5	51.4	61.0	89	31	630	3.72	2.32	4.96	7	.0
October----	59.1	40.9	50.0	80	21	324	3.35	1.69	4.78	8	.6
November---	46.3	31.6	39.0	71	7	92	4.01	2.68	5.22	10	10.1
December---	32.8	16.4	24.6	60	-16	19	4.00	2.73	5.15	11	24.7
Year:											
Average---	54.7	36.6	45.7	---	---	---	---	---	---	---	---
Extreme---	---	---	---	93	-27	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,320	40.30	35.22	45.29	101	101.2

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-79 at Watertown, New York)

Probability	Temperature		
	24^{o} F or lower	28^{o} F or lower	32^{o} F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 24	May 8	May 28
2 years in 10 later than--	Apr. 19	May 2	May 23
5 years in 10 later than--	Apr. 11	Apr. 22	May 11
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 3	Sept. 20
2 years in 10 earlier than--	Oct. 23	Oct. 8	Sept. 25
5 years in 10 earlier than--	Nov. 5	Oct. 17	Oct. 7

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-79 at Watertown, New York)

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24^{o} F	Higher than 28^{o} F	Higher than 32^{o} F
	Days	Days	Days
9 years in 10	181	156	122
8 years in 10	190	164	131
5 years in 10	207	178	147
2 years in 10	225	192	164
1 year in 10	234	199	173

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AgA	Agawam fine sandy loam, 0 to 3 percent slopes	330	*
AgB	Agawam fine sandy loam, 3 to 8 percent slopes	843	0.1
AhA	Allis silt loam, 0 to 3 percent slopes	1,489	0.2
AhB	Allis silt loam, 3 to 8 percent slopes	344	*
AlA	Alton gravelly loam, 0 to 3 percent slopes	203	*
AlB	Alton gravelly loam, 3 to 8 percent slopes	1,403	0.2
AlC	Alton gravelly loam, 8 to 15 percent slopes	476	0.1
AlD	Alton gravelly loam, 15 to 25 percent slopes	773	0.1
AlE	Alton gravelly loam, 25 to 45 percent slopes	300	*
AmA	Amenia loam, 0 to 3 percent slopes	1,632	0.2
AmB	Amenia loam, 3 to 8 percent slopes	2,137	0.3
AnA	Angola silt loam, 0 to 3 percent slopes	1,229	0.2
AnB	Angola silt loam, 3 to 8 percent slopes	1,064	0.1
ArB	Arkport fine sandy loam, 3 to 8 percent slopes	1,321	0.2
ArC	Arkport fine sandy loam, 8 to 15 percent slopes	1,031	0.1
Be	Beaches	925	0.1
BfF	Benson channery silt loam, very rocky, 25 to 50 percent slopes	4,353	0.5
BgB	Benson-Galoo complex, very rocky, 0 to 8 percent slopes	30,133	3.8
BhB	Bice fine sandy loam, 3 to 8 percent slopes	4,579	0.6
BhC	Bice fine sandy loam, 8 to 15 percent slopes	2,243	0.3
BhD	Bice fine sandy loam, 15 to 25 percent slopes	1,156	0.1
BhF	Bice fine sandy loam, 25 to 50 percent slopes	1,587	0.2
BkC	Bice very stony fine sandy loam, 0 to 15 percent slopes	5,601	0.7
BlB	Bice-Haights complex, undulating	2,562	0.3
BlC	Bice-Haights complex, rolling	3,357	0.4
BmB	Bice-Pinckney complex, undulating	7,964	1.0
BmC	Bice-Pinckney complex, rolling	6,953	0.9
BmD	Bice-Pinckney complex, hilly	682	0.1
BnA	Blasdell shaly silt loam, 0 to 3 percent slopes	1,597	0.2
BnB	Blasdell shaly silt loam, 3 to 8 percent slopes	1,694	0.2
BnC	Blasdell shaly silt loam, 8 to 15 percent slopes	277	*
BoA	Bombay loam, 0 to 3 percent slopes	921	0.1
BoB	Bombay loam, 3 to 8 percent slopes	2,765	0.3
BpB	Bonaparte gravelly loamy fine sand, 0 to 8 percent slopes	383	0.1
BpC	Bonaparte gravelly loamy fine sand, 8 to 15 percent slopes	237	*
Bt	Boots muck	963	0.1
Ca	Canandaigua silt loam	3,331	0.4
Cb	Canandaigua mucky silt loam	1,449	0.2
Cc	Carbondale muck	1,429	0.2
Cd	Carlisle muck	5,391	0.7
ChB	Chatfield loam, rocky, 0 to 8 percent slopes	485	0.1
CkC	Chatfield-Rock outcrop complex, rolling	7,748	1.0
CkE	Chatfield-Rock outcrop complex, steep	2,685	0.3
ClA	Chaumont silty clay, 0 to 3 percent slopes	23,453	2.9
ClB	Chaumont silty clay, 3 to 8 percent slopes	11,346	1.4
CmA	Claverack loamy fine sand, 0 to 3 percent slopes	403	0.1
CmB	Claverack loamy fine sand, 3 to 8 percent slopes	2,828	0.4
CnB	Collamer silt loam, 3 to 8 percent slopes	20,645	2.6
CnC	Collamer silt loam, 8 to 15 percent slopes	4,654	0.6
CnC3	Collamer silt loam, 8 to 15 percent slopes, severely eroded	121	*
CoB	Collamer silt loam, bedrock substratum, 3 to 8 percent slopes	3,304	0.4
Cp	Covington silty clay	13,709	1.7
DcB	Danley silt loam, 3 to 8 percent slopes	1,049	0.1
DcC	Danley silt loam, 8 to 15 percent slopes	778	0.1
DcD	Danley silt loam, 15 to 25 percent slopes	297	*
DdA	Darien silt loam, 0 to 3 percent slopes	186	*
DdB	Darien silt loam, 3 to 8 percent slopes	1,898	0.2
DdC	Darien silt loam, 8 to 15 percent slopes	406	0.1
DeB	Deerfield loamy fine sand, 0 to 8 percent slopes	9,705	1.2
Dp	Dumps	282	*
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes	2,280	0.3
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes	4,513	0.6
Em	Ensley silt loam	4,562	0.6

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
En	Ensley very stony silt loam	2,647	0.3
FaB	Farmington loam, 0 to 8 percent slopes	27,320	3.4
Fu	Fluvaquents-Udifluvents complex, frequently flooded	16,694	2.1
GaA	Galen fine sandy loam, 0 to 3 percent slopes	1,488	0.2
GaB	Galen fine sandy loam, 3 to 8 percent slopes	1,848	0.2
GbB	Galoo-Rock outcrop complex, 0 to 8 percent slopes	36,678	4.6
GcB	Galoo, acid-Rock outcrop complex, 0 to 8 percent slopes	7,497	0.9
GlA	Galway silt loam, 0 to 3 percent slopes	10,608	1.3
GlB	Galway silt loam, 3 to 8 percent slopes	18,244	2.3
GlC	Galway silt loam, 8 to 15 percent slopes	639	0.1
GmC	Galway very stony silt loam, 0 to 15 percent slopes	11,790	1.5
Gr	Granby mucky loamy fine sand	389	0.1
GtA	Groton gravelly loam, 0 to 3 percent slopes	805	0.1
GtB	Groton gravelly loam, 3 to 8 percent slopes	3,531	0.4
GtC	Groton gravelly loam, 8 to 15 percent slopes	1,189	0.1
GtD	Groton gravelly loam, 15 to 25 percent slopes	194	*
GtE	Groton gravelly loam, 25 to 35 percent slopes	411	0.1
GuB	Groton Variant gravelly loam, 0 to 8 percent slopes	2,209	0.3
Gv	Guffin clay	12,702	1.6
Gw	Gulf silt loam	3,108	0.4
HaB	Haights-Gulf silt loams, undulating	543	0.1
Hb	Halsey mucky loam	1,208	0.2
Hc	Hamlin silt loam	511	0.1
HeB	Heuvelton silt loam, 3 to 8 percent slopes	1,448	0.2
HeC	Heuvelton silt loam, 8 to 15 percent slopes	711	0.1
HmB	Heuvelton-Millsite-Rock outcrop complex, undulating	3,003	0.4
HnB	Hinckley gravelly sandy loam, 0 to 8 percent slopes	1,282	0.2
HoB	Hinckley-Hoosic cobbly sandy loams, 0 to 8 percent slopes	1,152	0.1
HoE	Hinckley-Hoosic cobbly sandy loams, 15 to 35 percent slopes	333	*
HpB	Hollis-Galoo, acid, complex, rocky, 0 to 8 percent slopes	3,338	0.4
HrB	Hollis-Rock outcrop complex, 0 to 8 percent slopes	7,321	0.9
HuB	Hudson silt loam, 3 to 8 percent slopes	22,036	2.7
HuC	Hudson silt loam, 8 to 15 percent slopes	5,273	0.7
HvB	Hudson-Chatfield-Rock outcrop complex, undulating	1,555	0.2
HyE3	Hudson and Vergennes soils, 15 to 35 percent slopes, severely eroded	3,568	0.4
InB	Insula-Quetico complex, rocky, 0 to 8 percent slopes	2,533	0.3
IoB	Insula-Rock outcrop complex, 0 to 8 percent slopes	3,543	0.4
IrB	Ira gravelly silt loam, 3 to 8 percent slopes	1,287	0.2
IrC	Ira gravelly silt loam, 8 to 15 percent slopes	165	*
Ju	Junius loamy fine sand	777	0.1
KgA	Kingsbury silty clay, 0 to 2 percent slopes	21,393	2.7
KgB	Kingsbury silty clay, 2 to 6 percent slopes	7,954	1.0
Kh	Kingsbury-Livingston complex	1,736	0.2
LaB	Lagross-Haights complex, undulating	3,326	0.4
LaC	Lagross-Haights complex, rolling	5,173	0.6
Lb	Lamson fine sandy loam	3,389	0.4
Lc	Livingston mucky silty clay	9,907	1.2
Ld	Livingston silty clay loam, frequently flooded	1,698	0.2
LoA	Lowville silt loam, 0 to 3 percent slopes	243	*
LoB	Lowville silt loam, 3 to 8 percent slopes	1,562	0.2
LoC	Lowville silt loam, 8 to 15 percent slopes	1,268	0.2
LoD	Lowville silt loam, 15 to 25 percent slopes	516	0.1
Ma	Madalin silt loam	9,545	1.2
MdA	Madrid sandy loam, 0 to 3 percent slopes	173	*
MdB	Madrid sandy loam, 3 to 8 percent slopes	5,105	0.6
MdC	Madrid sandy loam, 8 to 15 percent slopes	4,278	0.5
MdD	Madrid sandy loam, 15 to 25 percent slopes	1,931	0.2
MnB	Manlius shaly silt loam, 3 to 8 percent slopes	2,766	0.3
MnC	Manlius shaly silt loam, 8 to 15 percent slopes	641	0.1
MoA	Massena silt loam, 0 to 3 percent slopes	1,988	0.2
MoB	Massena silt loam, 3 to 8 percent slopes	1,178	0.1
MpB	Massena very stony loam, 0 to 8 percent slopes	5,364	0.7
MtB	Millsite loam, rocky, 0 to 8 percent slopes	453	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
MuC	Millsite-Rock outcrop complex, rolling	4,241	0.5
MuE	Millsite-Rock outcrop complex, steep	7,618	1.0
Mv	Minoa fine sandy loam	4,328	0.5
MwA	Muskellunge silt loam, 0 to 3 percent slopes	1,650	0.2
MwB	Muskellunge silt loam, 3 to 8 percent slopes	1,568	0.2
MxC	Muskellunge-Millsite-Rock outcrop complex, rolling	1,418	0.2
NaC	Nassau shaly silt loam, 8 to 15 percent slopes	1,454	0.2
NbF	Nassau-Manlius shaly silt loams, rocky, 25 to 50 percent slopes	626	0.1
NlA	Nellis loam, 0 to 3 percent slopes	415	0.1
NlB	Nellis loam, 3 to 8 percent slopes	4,892	0.6
NlC	Nellis loam, 8 to 15 percent slopes	3,414	0.4
NlD	Nellis loam, 15 to 25 percent slopes	992	0.1
NmE	Nellis and Madrid soils, steep	2,755	0.3
Nn	Newstead silt loam	13,009	1.6
NoA	Niagara silt loam, 0 to 3 percent slopes	11,004	1.4
NoB	Niagara silt loam, 3 to 8 percent slopes	4,324	0.5
NpB	Niagara silt loam, bedrock substratum, 2 to 6 percent slopes	861	0.1
Pa	Palms muck	5,135	0.6
PhA	Phelps gravelly loam, 0 to 3 percent slopes	1,936	0.2
PhB	Phelps gravelly loam, 3 to 8 percent slopes	693	0.1
PkB	Pinckney-Ensley silt loams, undulating	6,987	0.9
Pm	Pits, quarry	370	0.1
Pn	Pits, sand and gravel	1,502	0.2
PoB	Plainfield sand, 0 to 8 percent slopes	10,088	1.3
PoC	Plainfield sand, rolling	2,057	0.3
PpD	Plainfield and Windsor soils, hilly	3,024	0.4
Ps	Pootatuck fine sandy loam	660	0.1
QeB	Quetico-Rock outcrop complex, 2 to 8 percent slopes	8,036	1.0
RhA	Rhinebeck silt loam, 0 to 3 percent slopes	23,297	2.9
RhB	Rhinebeck silt loam, 3 to 8 percent slopes	14,535	1.8
RkC	Rhinebeck-Chatfield-Rock outcrop complex, rolling	4,541	0.6
Rn	Rhinebeck Variant silty clay loam	1,576	0.2
Ru	Ruse gravelly loam, rocky	6,198	0.8
Sa	Saprists and Aquents, ponded	12,793	1.6
Sc	Scarboro mucky loamy fine sand	1,677	0.2
SdA	Scriba gravelly silt loam, 0 to 3 percent slopes	195	*
SdB	Scriba gravelly silt loam, 3 to 8 percent slopes	121	*
Sh	Shaker fine sandy loam	4,565	0.6
SoB	Sodus gravelly silt loam, 3 to 8 percent slopes	974	0.1
SoC	Sodus gravelly silt loam, 8 to 15 percent slopes	583	0.1
SoD	Sodus gravelly silt loam, 15 to 25 percent slopes	321	*
Su	Sun silt loam	1,605	0.2
Sv	Sun very stony silt loam	2,989	0.4
Te	Teel silt loam	2,817	0.4
Ua	Udorthents, loamy	740	0.1
Ub	Udorthents, smoothed	4,524	0.6
Uc	Udorthents-Udifluvents complex	2,518	0.3
Ur	Urban land	636	0.1
VeB	Vergennes silty clay loam, 3 to 8 percent slopes	27,249	3.4
VeC	Vergennes silty clay loam, 8 to 15 percent slopes	3,047	0.4
Wa	Wareham loamy fine sand	4,568	0.6
We	Wayland silt loam	2,369	0.3
Wh	Whately fine sandy loam	733	0.1
Wk	Willette muck	1,953	0.2
WmB	Williamson silt loam, 3 to 8 percent slopes	1,795	0.2
WnB	Wilpoint silty clay loam, 3 to 8 percent slopes	17,053	2.1
WnC	Wilpoint silty clay loam, 8 to 15 percent slopes	677	0.1
WoB	Windsor loamy fine sand, 0 to 8 percent slopes	10,728	1.3
WoC	Windsor loamy fine sand, 8 to 15 percent slopes	1,142	0.1
	Water	693	0.1
	Total	801,878	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
AgA	Agawam fine sandy loam, 0 to 3 percent slopes
AgB	Agawam fine sandy loam, 3 to 8 percent slopes
AlA	Alton gravelly loam, 0 to 3 percent slopes
AlB	Alton gravelly loam, 3 to 8 percent slopes
AmA	Amenia loam, 0 to 3 percent slopes
AmB	Amenia loam, 3 to 8 percent slopes
AnA	Angola silt loam, 0 to 3 percent slopes (where drained)
ArB	Arkport fine sandy loam, 3 to 8 percent slopes
BhB	Bice fine sandy loam, 3 to 8 percent slopes
BlB	Bice-Haights complex, undulating
BmB	Bice-Pinckney complex, undulating
BnA	Blasdell shaly silt loam, 0 to 3 percent slopes
BnB	Blasdell shaly silt loam, 3 to 8 percent slopes
BoA	Bombay loam, 0 to 3 percent slopes
BoB	Bombay loam, 3 to 8 percent slopes
CmA	Claverack loamy fine sand, 0 to 3 percent slopes
CmB	Claverack loamy fine sand, 3 to 8 percent slopes
DcB	Danley silt loam, 3 to 8 percent slopes
DdA	Darien silt loam, 0 to 3 percent slopes (where drained)
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes
GaA	Galen fine sandy loam, 0 to 3 percent slopes
GaB	Galen fine sandy loam, 3 to 8 percent slopes
GlA	Galway silt loam, 0 to 3 percent slopes
GlB	Galway silt loam, 3 to 8 percent slopes
Hc	Hamlin silt loam
LoA	Lowville silt loam, 0 to 3 percent slopes
MdA	Madrid sandy loam, 0 to 3 percent slopes
MdB	Madrid sandy loam, 3 to 8 percent slopes
MoA	Massena silt loam, 0 to 3 percent slopes (where drained)
MoB	Massena silt loam, 3 to 8 percent slopes (where drained)
Mv	Minoa fine sandy loam (where drained)
MwA	Muskellunge silt loam, 0 to 3 percent slopes (where drained)
NlA	Nellis loam, 0 to 3 percent slopes
NlB	Nellis loam, 3 to 8 percent slopes
Nn	Newstead silt loam (where drained)
NoA	Niagara silt loam, 0 to 3 percent slopes (where drained)
NpB	Niagara silt loam, bedrock substratum, 2 to 6 percent slopes (where drained)
PhA	Phelps gravelly loam, 0 to 3 percent slopes
PhB	Phelps gravelly loam, 3 to 8 percent slopes
Ps	Pootatuck fine sandy loam
RhA	Rhinebeck silt loam, 0 to 3 percent slopes (where drained)
Sh	Shaker fine sandy loam (where drained)
SoB	Sodus gravelly silt loam, 3 to 8 percent slopes
Te	Teel silt loam

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
AgA------------- Agawam	I	24	120	5.0	3.5	95	60	6.5
AgB------------- Agawam	IIe	24	120	5.0	3.5	95	60	6.5
AhA, AhB-------- Allis	IVw	16	50	---	2.5	---	---	5.0
AlA------------- Alton	IIs	20	100	4.5	3.5	90	50	6.5
AlB------------- Alton	IIs	20	100	4.5	3.5	90	50	6.5
AlC------------- Alton	IIIe	16	80	4.0	3.0	85	45	6.0
AlD------------- Alton	IVe	10	50	3.5	3.0	85	40	6.0
AlE------------- Alton	VIIe	---	---	---	---	---	---	---
AmA------------- Amenia	IIw	24	120	4.5	3.5	95	60	6.5
AmB------------- Amenia	IIe	24	120	4.5	3.5	95	60	6.5
AnA------------- Angola	IIIw	14	70	---	2.5	55	---	5.0
AnB------------- Angola	IIIw	14	70	---	2.5	55	---	5.0
ArB------------- Arkport	IIe	20	160	4.5	3.5	90	60	6.5
ArC------------- Arkport	IIIe	16	80	4.0	3.0	85	55	6.0
Be**. Beaches								
BfF------------- Benson	VIIe	---	---	---	---	---	---	---
BgB------------- Benson-Galoo	VIs	---	---	---	---	---	---	---
BhB------------- Bice	IIe	20	100	4.5	3.5	90	55	6.5
BhC------------- Bice	IIIe	18	90	4.5	3.5	85	50	6.5

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
BhD------------- Bice	IVe	12	60	4.0	3.0	70	40	6.0
BhF------------- Bice	VIIe	---	---	---	---	---	---	---
BkC------------- Bice	VIs	---	---	---	---	---	---	3.8
BlB------------- Bice-Haights	IIe	20	100	4.5	3.5	85	45	6.0
BlC------------- Bice-Haights	IIIe	18	90	4.0	3.5	85	45	6.0
BmB------------- Bice-Pinckney	IIe	19	95	4.5	3.5	85	45	7.3
BmC------------- Bice-Pinckney	IIIe	18	90	4.0	3.5	80	45	7.1
BmD------------- Bice-Pinckney	IVe	12	60	3.5	3.0	70	40	6.3
BnA------------- Blasdell	IIs	20	100	4.5	3.5	90	50	6.5
BnB------------- Blasdell	IIs	20	100	4.5	3.5	90	50	6.5
BnC------------- Blasdell	IIIe	18	90	4.0	3.5	85	45	6.5
BoA------------- Bombay	IIw	23	115	4.5	3.5	95	60	6.5
BoB------------- Bombay	IIe	23	115	4.5	3.5	95	60	6.5
BpB------------- Bonaparte	IIIs	12	60	2.5	2.5	55	---	5.0
BpC------------- Bonaparte	IVs	10	50	2.0	2.0	50	---	4.0
Bt-------------- Boots	Vw	---	---	---	---	---	---	---
Ca-------------- Canandaigua	IIIw	17	85	---	3.5	60	---	6.5
Cb-------------- Canandaigua	Vw	---	---	---	---	---	---	---
Cc-------------- Carbondale	VIw	---	---	---	---	---	---	---
Cd-------------- Carlisle	Vw	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
ChB------------- Chatfield	IIe	17	85	4.0	3.5	75	45	6.5
CkC**----------- Chatfield-Rock outcrop	VIs	---	---	---	---	---	---	---
CkE**----------- Chatfield-Rock outcrop	VIIe	---	---	---	---	---	---	---
ClA, ClB-------- Chaumont	IIIw	12	60	---	4.0	55	---	7.5
CmA------------- Claverack	IIw	18	90	3.5	3.5	80	40	6.5
CmB------------- Claverack	IIw	18	90	3.5	3.5	80	40	6.5
CnB------------- Collamer	IIe	24	120	5.0	4.5	95	60	8.5
CnC------------- Collamer	IIIe	22	110	4.5	4.5	90	55	8.5
CnC3------------ Collamer	IVe	16	80	4.0	4.0	75	40	7.5
CoB------------- Collamer	IIe	24	120	5.0	4.5	95	60	8.5
Cp-------------- Covington	IVw	12	60	---	2.5	---	---	5.0
DcB------------- Danley	IIe	20	100	4.5	4.5	90	55	8.5
DcC------------- Danley	IIIe	18	90	4.5	4.5	80	50	8.5
DcD------------- Danley	IVe	15	75	4.0	4.0	70	45	7.5
DdA------------- Darien	IIIw	16	80	4.0	3.0	60	40	6.5
DdB------------- Darien	IIIw	16	80	4.0	3.0	65	30	6.0
DdC------------- Darien	IIIe	14	70	3.5	3.0	65	30	6.0
DeB------------- Deerfield	IIIw	16	80	3.5	3.5	60	35	6.5
Dp**. Dumps								
ElA------------- Elmridge	IIw	20	100	4.5	3.5	85	45	6.5

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
ElB------------- Elmridge	IIw	20	100	4.5	3.5	85	45	6.5
Em-------------- Ensley	IVw	---	---	---	---	---	---	---
En-------------- Ensley	VIIs	---	---	---	---	---	---	---
FaB------------- Farmington	IIIs	12	60	3.5	3.5	70	35	6.5
Fu-------------- Fluvaquents-Udifluvents	Vw	---	---	---	---	---	---	---
GaA------------- Galen	IIw	20	110	4.5	4.5	90	55	8.5
GaB------------- Galen	IIw	20	100	4.5	4.5	90	55	8.5
GbB**----------- Galoo-Rock outcrop	VIIs	---	---	---	---	---	---	---
GcB**----------- Galoo, acid-Rock outcrop	VIIs	---	---	---	---	---	---	---
GlA------------- Galway	IIs	20	100	4.5	3.5	85	55	6.5
GlB------------- Galway	IIe	20	100	4.5	3.5	85	55	6.5
GlC------------- Galway	IIIe	18	90	4.0	3.0	80	50	6.0
GmC------------- Galway	VIs	---	---	---	---	---	---	---
Gr-------------- Granby	IVw	11	55	---	2.5	---	---	5.0
GtA, GtB-------- Groton	IIIs	15	75	3.0	3.0	60	30	6.0
GtC------------- Groton	IVs	13	65	2.5	2.5	55	30	5.0
GtD------------- Groton	VIs	---	---	---	---	---	---	---
GtE------------- Groton	VIIs	---	---	---	---	---	---	---
GuB------------- Groton Variant	IIIs	14	70	3.0	3.0	55	30	6.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
Gv-------------- Guffin	IVw	10	50	---	2.5	---	---	5.0
Gw-------------- Gulf	IIIw	---	---	---	2.5	---	---	5.0
HaB------------- Haights-Gulf	IIIw	16	80	---	3.5	60	---	6.5
Hb-------------- Halsey	Vw	---	---	---	---	---	---	---
Hc-------------- Hamlin	I	24	120	5.5	4.5	100	65	8.5
HeB------------- Heuvelton	IIe	20	100	4.5	3.0	70	55	6.5
HeC------------- Heuvelton	IIIe	18	90	4.0	3.0	65	50	6.5
HmB**----------- Heuvelton-Millsite-Rock outcrop	VIs	---	---	---	---	---	---	---
HnB------------- Hinckley	IIIs	12	60	2.5	2.5	55	---	5.0
HoB------------- Hinckley-Hoosic	IVs	12	60	2.5	2.5	55	---	5.0
HoE------------- Hinckley-Hoosic	VIIs	---	---	---	---	---	---	---
HpB------------- Hollis-Galoo	IVs	12	60	---	2.5	55	---	5.0
HrB**----------- Hollis-Rock outcrop	VIs	---	---	---	---	---	---	---
HuB------------- Hudson	IIe	21	105	4.5	3.5	90	55	6.5
HuC------------- Hudson	IIIe	19	95	4.0	3.5	85	50	6.5
HvB**----------- Hudson-Chatfield-Rock outcrop	VIs	---	---	---	---	---	---	---
HyE3------------ Hudson and Vergennes	VIe	---	---	---	---	---	---	---
InB------------- Insula-Quetico	IVs	12	60	---	2.5	55	---	5.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
IoB**: Insula-Rock outcrop	VIIs	---	---	---	---	---	---	---
IrB: Ira	IIw	19	85	4.0	3.0	70	40	6.0
IrC: Ira	IIIe	17	75	3.0	3.0	65	35	6.0
Ju: Junius	IIIw	14	70	---	3.0	60	30	6.0
KgA, KgB: Kingsbury	IIIw	16	80	---	4.0	55	---	7.5
Kh: Kingsbury-Livingston	IVw	---	---	---	3.0	---	---	6.0
LaB: Lagross-Haights	IIe	20	100	4.5	3.5	90	55	6.5
LaC: Lagross-Haights	IIIe	18	90	4.0	3.5	85	45	6.5
Lb: Lamson	IVw	10	50	---	2.5	---	---	5.0
Lc: Livingston	IVw	11	55	---	2.5	---	---	5.0
Ld: Livingston	Vw	---	---	---	---	---	---	2.5
LoA: Lowville	I	24	120	5.5	3.5	95	60	6.5
LoB: Lowville	IIe	24	120	5.5	3.5	95	60	6.5
LoC: Lowville	IIIe	22	110	5.0	3.5	90	55	6.5
LoD: Lowville	IVe	16	80	4.5	3.5	75	40	6.5
Ma: Madalin	IVw	12	60	---	2.5	---	---	5.0
MdA: Madrid	I	23	115	5.0	3.5	100	65	6.5
MdB: Madrid	IIe	23	115	5.0	3.5	100	65	6.5
MdC: Madrid	IIIe	21	105	4.5	3.5	95	60	6.5
MdD: Madrid	IVe	15	75	4.0	3.5	80	45	6.5

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
MnB------------- Manlius	IIe	16	70	3.0	3.0	70	35	6.0
MnC------------- Manlius	IIIe	15	75	2.5	3.0	65	30	6.0
MoA, MoB-------- Massena	IIIw	18	90	3.5	3.5	70	40	6.5
MpB------------- Massena	VIIs	18	90	3.5	3.5	70	40	6.5
MtB------------- Millsite	IIe	85	17	4.5	3.5	75	45	6.5
MuC**----------- Millsite-Rock outcrop	VIs	---	---	---	---	---	---	---
MuE**----------- Millsite-Rock outcrop	VIIe	---	---	---	---	---	---	---
Mv-------------- Minoa	IIIw	20	100	3.0	3.5	80	40	6.5
MwA------------- Muskellunge	IIIw	17	85	3.0	4.0	65	30	7.5
MwB------------- Muskellunge	IIIw	17	85	3.0	4.0	65	30	7.5
MxC**----------- Muskellunge-Millsite-Rock outcrop	VIIs	---	---	---	---	---	---	---
NaC------------- Nassau	IVe	10	50	2.0	2.0	50	---	4.0
NbF------------- Nassau-Manlius	VIIe	---	---	---	---	---	---	---
NlA------------- Nellis	I	25	125	5.5	3.5	10	65	6.5
NlB------------- Nellis	IIe	25	125	5.5	3.5	10	65	6.5
NlC------------- Nellis	IIIe	24	20	5.0	3.5	95	60	6.5
NlD------------- Nellis	IVe	16	80	4.5	3.5	80	45	6.5
NmE------------- Nellis and Madrid	VIIe	---	---	---	---	---	---	3.6
Nn-------------- Newstead	IIIw	14	70	---	2.5	---	---	5.0

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
NoA------------- Niagara	IIIw	20	100	4.0	3.5	85	45	6.5
NoB, NpB-------- Niagara	IIIw	20	100	4.0	3.5	85	45	6.5
Pa-------------- Palms	Vw	---	---	---	---	---	---	---
PhA------------- Phelps	IIw	24	100	4.0	3.5	95	55	6.5
PhB------------- Phelps	IIe	20	100	4.0	3.5	95	55	6.5
PkB------------- Pinckney-Ensley	IIIw	17	85	---	3.5	55	---	6.5
Pm**, Pn**. Pits								
PoB------------- Plainfield	VIs	5	43	---	---	42	---	---
PoC------------- Plainfield	VIs	---	---	---	---	---	---	---
PpD------------- Plainfield and Windsor	VIIs	---	---	---	---	---	---	---
Ps-------------- Pootatuck	IIw	20	100	4.5	3.5	90	55	6.5
QeB**----------- Quetico-Rock outcrop	VIIs	---	---	---	---	---	---	---
RhA------------- Rhinebeck	IIIw	17	85	3.0	4.0	65	30	7.5
RhB------------- Rhinebeck	IIIw	17	85	3.0	4.0	65	30	7.5
RkC**----------- Rhinebeck-Chatfield-Rock outcrop	VIs	---	---	---	---	---	---	---
Rn-------------- Rhinebeck Variant	IIIw	17	85	3.0	4.0	65	30	5.5
Ru-------------- Ruse	Vw	---	---	---	---	---	---	---
Sa-------------- Saprists and Aquents	VIIIw	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
Sc--------------- Scarboro	Vw	---	---	---	---	---	---	---
SdA-------------- Scriba	IIIw	14	70	3.0	3.0	50	30	6.0
SdB-------------- Scriba	IIIw	14	70	3.0	3.0	50	30	6.0
Sh--------------- Shaker	IIIw	18	90	3.0	3.0	75	---	6.0
SoB-------------- Sodus	IIe	19	95	4.0	3.5	75	45	6.5
SoC-------------- Sodus	IIIe	17	85	4.0	3.5	70	40	6.5
SoD-------------- Sodus	IVe	10	50	3.5	3.0	55	30	6.0
Su--------------- Sun	IVw	12	60	---	2.5	---	---	5.0
Sv--------------- Sun	VIIs	---	---	---	---	---	---	---
Te--------------- Teel	IIw	24	120	5.0	4.5	90	55	8.5
Ua, Ub. Udorthents								
Uc--------------- Udorthents-Udifluvents	VIIIs	---	---	---	---	---	---	---
Ur**. Urban land								
VeB-------------- Vergennes	IIe	19	95	4.0	3.5	85	30	6.5
VeC-------------- Vergennes	IIIe	18	90	4.5	3.5	80	30	6.5
Wa--------------- Wareham	IVw	11	55	---	2.5	---	---	5.0
We--------------- Wayland	IVw	14	70	---	3.5	70	---	6.5
Wh--------------- Whately	Vw	---	---	---	---	---	---	---
Wk--------------- Willette	Vw	---	---	---	---	---	---	---
WmB-------------- Williamson	IIe	19	95	4.5	3.5	75	45	6.5

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn silage	Corn	Alfalfa hay	Trefoil-grass hay	Oats	Winter wheat	Pasture
		Tons	Bu	Tons	Tons	Bu	Bu	AUM*
WnB------------- Wilpoint	IIe	19	95	4.0	3.5	85	30	6.5
WnC------------- Wilpoint	IIIe	18	90	4.0	3.5	80	30	6.5
WoB------------- Windsor	IIIs	14	70	3.0	3.0	55	---	6.0
WoC------------- Windsor	IVs	12	60	2.5	2.5	50	---	6.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	
I	1,672	---	---	---
II	197,808	159,233	22,613	15,962
III	265,930	39,890	179,173	46,867
IV	79,880	8,242	65,385	6,253
V	43,295	---	43,295	---
VI	95,350	3,568	3,165	88,617
VII	92,960	20,024	---	72,936
VIII	15,311	---	12,793	2,518

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
AgA, AgB Agawam	3A	Slight	Slight	Slight	Slight	Sugar maple Eastern white pine Black oak American beech	**65 71 60 ---	3 9 3 ---	Eastern white pine, red pine, white spruce, European larch, Scotch pine, pitch pine, jack pine.
AhA, AhB Allis	2W	Slight	Severe	Severe	Severe	Red maple White ash	50 ---	2 ---	Northern white-cedar, white spruce, Norway spruce, balsam fir.
AlA, AlB, AlC Alton	3A	Slight	Slight	Slight	Slight	Sugar maple Northern red oak American beech	76 70 ---	3 4 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
AlD Alton	3R	Slight	Moderate	Slight	Slight	Sugar maple Northern red oak American beech	76 70 ---	3 4 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
AlE Alton	3R	Moderate	Severe	Slight	Slight	Sugar maple Northern red oak American beech	76 70 ---	3 4 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
AmA, AmB Amenia	3A	Slight	Slight	Slight	Slight	Sugar maple American beech Eastern white pine White ash American basswood	65 --- 72 75 ---	3 --- 10 3 ---	Eastern white pine, Austrian pine, Norway spruce, white spruce, northern white-cedar, European larch, black locust, black walnut, hybrid poplar.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
AnA, AnB-------- Angola	3W	Slight	Moderate	Moderate	Slight	Red maple-----------	60	3	Eastern white pine, Norway spruce, white spruce, hemlock, balsam fir.
						Sugar maple---------	60	3	
						White ash-----------	70	3	
ArB, ArC-------- Arkport	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Norway spruce, Scotch pine, pitch pine, jack pine, eastern white pine.
						Black cherry--------	---	---	
						Eastern white pine--	85	10	
BfF------------- Benson	2R	Severe	Severe	Severe	Moderate	Sugar maple---------	45	2	Eastern white pine.
						White ash-----------	49	---	
						American beech------	49	---	
						Bitternut hickory---	---	---	
BgB***:									
Benson----------	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine.
						Eastern white pine--	55	6	
						White ash-----------	49	---	
						American beech------	---	---	
						Bitternut hickory---	---	---	
Galoo-----------	2D	Slight	Slight	Severe	Severe	Red maple-----------	40	4	White spruce, northern white-cedar, eastern redcedar.
						Eastern white pine--	30	2	
						Northern red oak----	35	2	
BhB, BhC-------- Bice	2A	Slight	Slight	Slight	Slight	Red maple-----------	55	2	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Red spruce----------	50	8	
						Sugar maple---------	67	3	
						Eastern hemlock-----	---	---	
BhD------------- Bice	2R	Slight	Moderate	Slight	Slight	Red maple-----------	55	2	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
						Red spruce----------	50	8	
						Sugar maple---------	67	3	
						Eastern hemlock-----	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
BhF------------- Bice	2R	Moderate	Severe	Slight	Slight	Red maple----------- Red spruce---------- Sugar maple--------- Eastern hemlock-----	55 50 67 ---	2 8 3 ---	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
BkC------------- Bice	2A	Slight	Slight	Slight	Slight	Red maple----------- Red spruce---------- Sugar maple--------- Eastern hemlock-----	65 65 67 ---	3 8 3 ---	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
BlB***, BlC***:									
Bice-----------	2A	Slight	Slight	Slight	Slight	Red maple----------- Red spruce---------- Sugar maple--------- Eastern hemlock-----	65 65 67 ---	3 8 3 ---	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
Haights--------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- White ash----------- Eastern white pine--	69 80 85	3 4 10	Eastern white pine, red pine, Norway spruce, European larch.
BmB***, BmC***, BmD***:									
Bice----------	3A	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Red pine------------ Red spruce---------- Red maple----------- Shagbark hickory---- Sugar maple---------	65 65 70 50 55 --- 55	3 8 8 8 2 --- 2	Eastern white pine, red pine, white spruce, eastern hemlock, European larch.
Pinckney------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- American beech------ Hemlock------------- Yellow birch-------- American basswood--- Black cherry--------	66 --- --- 59 --- 70	3 --- --- --- --- 3	White spruce, Norway spruce, European larch, eastern white pine.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
BnA, BnB, BnC--- Blasdell	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- American beech------ Black cherry-------- White ash-----------	70 80 --- --- ---	3 4 --- --- ---	Eastern white pine, red pine, European larch, Norway spruce, white spruce, Scotch pine, pitch pine.
BoA, BoB-------- Bombay	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Black cherry-------- White ash----------- American basswood---	70 80 --- ---	3 4 --- ---	Eastern white pine, European larch, Norway spruce, white spruce, red pine, Scotch pine.
BpB, BpC-------- Bonaparte	3S	Slight	Slight	Severe	Slight	Northern red oak---- Eastern white pine-- Sugar maple--------- Aspen--------------- Gray birch---------- Black spruce--------	60 65 55 --- --- ---	3 8 2 --- --- ---	Eastern white pine, European larch, Austrian pine, black locust.
Bt-------------- Boots	3W	Slight	Severe	Severe	Severe	Tamarack------------	50	3	
Ca, Cb---------- Canandaigua	3W	Slight	Severe	Severe	Severe	Red maple----------- Northern white-cedar Black ash----------- Elm-----------------	65 --- --- ---	3 --- --- ---	Eastern white pine, white spruce, northern white-cedar.
Cc-------------- Carbondale	8W	Slight	Severe	Severe	Severe	Balsam fir---------- Black spruce-------- Northern white-cedar Tamarack------------ Red spruce----------	51 15 31 --- ---	8 2 --- --- ---	
Cd-------------- Carlisle	2W	Slight	Severe	Severe	Severe	Red maple----------- Black ash----------- Green ash----------- Quaking aspen------- White oak----------- Silver maple--------	56 --- --- --- --- 82	2 --- --- --- --- 2	
ChB------------- Chatfield	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Black oak----------- White ash----------- American beech------	65 52 75 ---	3 2 3 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
CkC***:									
Chatfield------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Scotch pine, pitch pine.
						Black oak-----------	52	2	
						White ash-----------	75	3	
						American beech------	---	---	
Rock outcrop.									
CkE***:									
Chatfield------	3R	Moderate	Severe	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, Scotch pine, pitch pine.
						Black oak-----------	52	2	
						White ash-----------	75	3	
						American beech------	---	---	
Rock outcrop.									
ClA, ClB-------- Chaumont	3W	Slight	Moderate	Moderate	Moderate	Sugar maple---------	60	3	Eastern white pine, Norway spruce, white spruce.
						Bitternut hickory---	---	---	
						Red maple-----------	70	3	
						White ash-----------	70	3	
						Eastern hemlock-----	---	---	
						Shagbark hickory----	---	---	
						Northern red oak----	---	---	
						White oak-----------	---	---	
CmA, CmB-------- Claverack	3S	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, white spruce.
						Northern red oak----	70	4	
						Eastern white pine--	75	10	
						Gray birch----------	---	---	
						Quaking aspen-------	---	---	
CnB------------- Collamer	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, white spruce, European larch, black walnut, hybrid poplar.
						Black cherry--------	80	4	
						White ash-----------	85	4	
						American beech------	---	---	
						American basswood---	75	3	
CnC, CnC3------- Collamer	3R	Moderate	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, white spruce, European larch, black walnut, hybrid poplar.
						Black cherry--------	80	4	
						White ash-----------	85	4	
						American beech------	---	---	
						American basswood---	75	3	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
CoB------------- Collamer	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, white spruce, European larch, black walnut, hybrid poplar.
						Black cherry--------	80	4	
						White ash-----------	85	4	
						American beech------	---	---	
						American basswood---	75	3	
Cp-------------- Covington	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	White spruce, northern white-cedar.
						Green ash-----------	---	---	
						White ash-----------	67	3	
						American basswood---	---	---	
						White oak-----------	---	---	
						Eastern white pine--	55	6	
DcB, DcC-------- Danley	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Norway spruce, white spruce, European larch, eastern white pine, red pine, Scotch pine.
						Black cherry--------	---	---	
						Hickory-------------	---	---	
						White ash-----------	---	---	
DcD------------- Danley	3R	Moderate	Moderate	Slight	Slight	Sugar maple---------	70	3	Norway spruce, white spruce, European larch, eastern white pine, red pine, Scotch pine.
						Black cherry--------	---	---	
						Hickory-------------	---	---	
						White ash-----------	---	---	
DdA, DdB, DdC--- Darien	3W	Slight	Moderate	Moderate	Moderate	Sugar maple---------	60	3	Eastern white pine, European larch, Norway spruce, white spruce, eastern hemlock.
						White ash-----------	---	---	
						Red maple-----------	---	---	
						Hickory-------------	---	---	
						Eastern hemlock-----	---	---	
DeB------------- Deerfield	7S	Slight	Slight	Moderate	Slight	Eastern white pine--	59	7	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
						Northern red oak----	64	3	
						Quaking aspen-------	---	---	
ElA, ElB-------- Elmridge	3A	Slight	Slight	Slight	Slight	Sugar maple---------	60	3	Eastern white pine, European larch, white spruce.
						Northern red oak----	70	4	
						Shagbark hickory----	60	---	
						Eastern white pine--	75	10	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Em-------------- Ensley	3W	Slight	Severe	Severe	Severe	Red maple-----------	62	3	
						Balsam fir----------	60	8	
						Red spruce----------	---	---	
						White ash-----------	---	---	
						Yellow birch--------	---	---	
En-------------- Ensley	2W	Slight	Severe	Severe	Severe	Red maple-----------	45	2	White spruce.
						White spruce--------	---	---	
FaB------------- Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	49	2	Eastern white pine, Austrian pine, European larch, black locust.
						American beech------	---	---	
						American basswood---	50	2	
						White ash-----------	43	2	
GaA, GaB-------- Galen	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Austrian pine, Norway spruce, black locust, black walnut.
						Eastern white pine--	85	10	
						Black cherry--------	---	---	
GbB***, GcB***:									
Galoo----------	2D	Slight	Slight	Severe	Severe	Red maple-----------	30	2	White spruce, eastern redcedar, northern white-cedar.
						Eastern white pine--	40	4	
						Northern red oak----	35	2	
Rock outcrop.									
GlA, GlB, GlC--- Galway	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, European larch, Norway spruce, red pine, white spruce, Scotch pine, pitch pine, jack pine.
						Northern red oak----	70	4	
						White ash-----------	75	3	
						American basswood---	---	---	
GmC------------- Galway	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, European larch, Norway spruce, white spruce, Scotch pine, jack pine, red pine.
						Northern red oak----	70	4	
						White ash-----------	75	3	
						American basswood---	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Gr-------------- Granby	3W	Slight	Severe	Severe	Severe	Red maple----------- Northern white-cedar American basswood--- White ash----------- Quaking aspen------- Black ash----------- Elm-----------------	70 --- --- 64 78 --- ---	3 --- --- 3 6 --- ---	Eastern white pine, white spruce, northern white-cedar.
GtA, GtB, GtC--- Groton	3S	Slight	Slight	Severe	Slight	Northern red oak---- Eastern white pine-- Red pine------------ Sugar maple---------	55 60 60 55	3 7 6 3	Eastern white pine, European larch, Austrian pine, black locust.
GtD, GtE-------- Groton	2S	Moderate	Moderate	Severe	Slight	Sugar maple--------- American beech------ Bitternut hickory---	55 --- ---	2 --- ---	Eastern white pine, European larch, Scotch pine, pitch pine, jack pine.
GuB------------- Groton Variant	2S	Slight	Slight	Severe	Slight	Northern red oak---- Eastern white pine-- Red pine------------	50 55 55	2 6 5	Eastern white pine, red pine, European larch.
Gv-------------- Guffin	2W	Slight	Severe	Severe	Severe	Red maple----------- Northern white-cedar Black ash----------- Silver maple--------	50 --- 50 ---	2 --- 2 ---	
Gw-------------- Gulf	3W	Slight	Severe	Severe	Severe	Red maple----------- Eastern white pine-- American basswood--- White ash-----------	60 60 --- ---	3 8 --- ---	Northern white-cedar, white spruce, Norway spruce, eastern hemlock.
HaB***: Haights--------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- White ash----------- Black cherry--------	70 80 ---	3 4 ---	Eastern white pine, Norway spruce, European larch.
Gulf-----------	3W	Slight	Severe	Severe	Severe	Red maple----------- Eastern white pine-- American basswood--- White ash-----------	60 60 --- ---	3 8 --- ---	Northern white-cedar, white spruce, Norway spruce, eastern hemlock.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Hb: Halsey	2W	Slight	Severe	Severe	Severe	Red maple	55	2	Northern white-cedar, white spruce.
						White oak	---	---	
						Northern white-cedar	---	---	
						Eastern redcedar	---	---	
						Eastern redcedar	---	---	
Hc: Hamlin	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, black locust, Norway spruce, black walnut, European larch, black locust, eastern redcedar, northern white-cedar, Austrian pine, white spruce, hybrid poplar.
						Black ash	---	---	
						White ash	---	---	
						American basswood	---	---	
						Black cherry	---	---	
						Bitternut hickory	---	---	
HeB: Heuvelton	2A	Slight	Slight	Slight	Slight	Sugar maple	---	---	Eastern white pine, Norway spruce, white spruce, black walnut, larch.
						Northern red oak	---	---	
						Eastern white pine	---	---	
						White ash	---	---	
						American beech	---	---	
HeC: Heuvelton	2R	Moderate	Slight	Slight	Slight	Sugar maple	---	---	Eastern white pine, Norway spruce, white spruce, black walnut, larch.
						Northern red oak	---	---	
						Eastern white pine	---	---	
						White ash	---	---	
						American beech	---	---	
HmB: Heuvelton	2A	Slight	Slight	Slight	Slight	Sugar maple	---	---	Eastern white pine, Norway spruce, white spruce, black walnut, larch.
						Northern red oak	---	---	
						Eastern white pine	---	---	
						White ash	---	---	
						American beech	---	---	
Millsite	3A	Slight	Slight	Slight	Slight	Sugar maple	**73	3	Eastern white pine, red pine, European larch, Norway spruce, Scotch pine, pitch pine, jack pine.
						Northern red oak	60	3	
						White ash	75	3	
Rock outcrop.									

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
HnB------------- Hinckley	7S	Slight	Slight	Severe	Slight	Eastern white pine--	61	7	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
						Northern red oak----	51	2	
						Paper birch---------	---	---	
						Sugar maple---------	66	3	
HoB***:									
Hinckley-------	2S	Slight	Slight	Severe	Slight	Northern red oak----	49	2	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
						Eastern white pine--	60	7	
						Red pine------------	58	6	
						Sugar maple---------	57	2	
Hoosic---------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, pitch pine, Scotch pine, jack pine.
						Northern red oak----	66	3	
HoE***:									
Hinckley-------	2S	Slight	Moderate	Severe	Slight	Northern red oak----	49	2	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
						Eastern white pine--	60	7	
						Red pine------------	58	6	
						Sugar maple---------	57	2	
Hoosic---------	3R	Slight	Moderate	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, red pine, European larch, pitch pine, Scotch pine, jack pine.
						Northern red oak----	66	3	
HpB***:									
Hollis---------	2D	Slight	Slight	Moderate	Severe	Northern red oak----	47	2	Eastern white pine, white spruce, Norway spruce, eastern hemlock.
						Eastern white pine--	55	6	
						Sugar maple---------	56	2	
						Hophornbeam---------	---	---	
Galoo----------	2D	Slight	Slight	Severe	Severe	Red maple-----------	30	2	White spruce, eastern redcedar, northern white-cedar.
						Eastern white pine--	40	4	
						Northern red oak----	35	2	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
HrB***:									
Hollis	2D	Slight	Slight	Moderate	Severe	Northern red oak	47	2	Eastern white pine, white spruce, Norway spruce, eastern hemlock.
						Eastern white pine	55	6	
						Sugar maple	56	2	
						Hophornbeam			
Rock outcrop.									
HuB	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, white spruce, Norway spruce, larch, black walnut.
Hudson						Northern red oak	80	4	
						Eastern white pine	85	10	
						White ash	85	4	
						American beech	---	---	
HuC	4R	Moderate	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, white spruce, Norway spruce, larch, black walnut.
Hudson						Northern red oak	80	4	
						Eastern white pine	85	10	
						White ash	85	4	
						American beech	---	---	
HvB***:									
Hudson	4	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, white spruce, Norway spruce, larch, black walnut.
						Northern red oak	80	4	
						Eastern white pine	85	10	
						White ash	85	4	
						American beech	---	---	
Chatfield	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, red pine, European larch, Scotch pine, pitch pine.
						Black oak	52	2	
						White ash	75	3	
						American beech	---	---	
						Hophornbeam	---	---	
Rock outcrop.									
HyE3***:									
Hudson	4R	Severe	Moderate	Slight	Slight	Northern red oak	80	4	Eastern white pine, yellow-poplar, black cherry, black walnut.
						Sugar maple	70	3	
						Eastern white pine	85	10	
						White ash	85	4	
Vergennes	3C	Severe	Moderate	Severe	Slight	Sugar maple	60	3	Eastern white pine, eastern redcedar, black locust, larch, Norway spruce, white spruce, northern white-cedar, Austrian pine, hybrid poplar.
						Eastern white pine	65	8	
						Northern red oak	58	3	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
InB***:									
Insula----------	6D	Slight	Slight	Moderate	Moderate	Eastern white pine--	50	6	Eastern white pine, white spruce, Norway spruce, eastern hemlock.
						Sugar maple---------	---	---	
						Hophornbeam---------	---	---	
Quetico---------	5D	Severe	Severe	Moderate	Severe	Eastern white pine--	35	5	White spruce.
						Red pine------------	35	4	
						Jack pine-----------	35	4	
						Quaking aspen-------	35	2	
						Northern red oak----	---	---	
						Hophornbeam---------			
IoB***:									
Insula----------	6D	Slight	Slight	Moderate	Moderate	Eastern white pine--	50	6	Eastern white pine, white spruce, Norway spruce, eastern hemlock.
						Sugar maple---------	---	---	
						Hophornbeam---------	---	---	
Rock outcrop.									
IrB, IrC--------- Ira	3A	Slight	Slight	Slight	Slight	Sugar maple---------	72	3	Eastern white pine, white spruce, Norway spruce, European larch, northern white-cedar, black locust, hybrid poplar.
						Black cherry--------	74	3	
						White ash-----------	81	---	
						American basswood---	---	---	
Ju--------------- Junius	3W	Slight	Moderate	Moderate	Moderate	Red maple-----------	70	3	Eastern white pine, northern white-cedar, white spruce.
						Eastern white pine--	65	8	
						White ash-----------	65	3	
						Eastern redcedar----	---	---	
						Northern white-cedar	---	---	
KgA, KgB--------- Kingsbury	3W	Slight	Moderate	Slight	Moderate	Red maple-----------	60	3	Eastern white pine, Norway spruce, white spruce, balsam fir.
						Northern red oak----	66	8	
						Eastern white pine--	75	10	
						White ash-----------	65	3	
						Hickory-------------	---	---	
						Eastern redcedar----	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Kh***:									
Kingsbury	3W	Slight	Moderate	Slight	Moderate	Sugar maple	60	3	Eastern white pine, Norway spruce, white spruce.
						White oak	---	---	
						Eastern white pine	75	10	
						White ash	67	3	
						White oak	---	---	
						Northern red oak	---	---	
						Eastern redcedar	---	---	
						Shagbark hickory	---	---	
Livingston	6W	Slight	Severe	Severe	Severe	American elm	38	---	
						Red maple	40	2	
						Northern white-cedar	---	---	
						Black ash	---	---	
						Silver maple	---	---	
						Green ash	---	---	
LaB***, LaC***:									
Lagross	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, white spruce, Norway spruce, European larch.
						American beech	80	4	
						Black cherry	---	---	
						White ash	---	---	
Haights	3A	Slight	Slight	Slight	Slight	Sugar maple	69	3	Eastern white pine, Norway spruce, European larch.
						White ash	80	4	
						Black cherry	---	---	
Lb Lamson	3W	Slight	Severe	Severe	Severe	Red maple	65	3	Northern white-cedar, eastern white pine.
						Eastern white pine	65	8	
						Pin oak	60	3	
						Elm	---	---	
Lc, Ld Livingston	6W	Slight	Severe	Severe	Severe	American elm	38	---	
						Red maple	40	2	
						Green ash	---	---	
						Silver maple	---	---	
LoA, LoB Lowville	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, red pine, Norway spruce, black walnut.
						American beech	70	3	
						Yellow birch	70	3	
						American basswood	---	---	
						White ash	---	---	
LoC Lowville	3R	Moderate	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, red pine, Norway spruce, black walnut.
						American beech	70	3	
						Yellow birch	70	3	
						American basswood	---	---	
						White ash	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
LoD------------- Lowville	3R	Severe	Moderate	Slight	Slight	Sugar maple--------- American beech------ Yellow birch-------- American basswood--- White ash-----------	70 70 70 --- ---	3 3 3 --- ---	Eastern white pine, red pine, Norway spruce, black walnut.
Ma-------------- Madalin	2W	Slight	Severe	Severe	Severe	Red maple----------- White ash----------- Eastern redcedar---- Northern white-cedar	50 50 --- ---	2 2 --- ---	Eastern white pine, northern white-cedar, white spruce.
MdA, MdB, MdC--- Madrid	3A	Slight	Slight	Slight	Slight	Sugar maple--------- American baswood---- Black cherry-------- American beech------	70 --- 80 ---	3 --- 4 ---	Eastern white pine, Norway spruce, white spruce, European larch, black locust, Austrian pine, hybrid poplar, black walnut, Douglas-fir.
MdD------------- Madrid	3R	Moderate	Moderate	Slight	Slight	Sugar maple--------- American basswood--- Black cherry-------- American beech------	70 --- 80 ---	3 --- 4 ---	Eastern white pine, Norway spruce, white spruce, European larch, black locust, Austrian pine, hybrid poplar, black walnut, Douglas-fir.
MnB, MnC-------- Manlius	3A	Slight	Slight	Slight	Slight	Black cherry-------- Sugar maple--------- White ash-----------	70 61 65	3 3 ---	Eastern white pine, Norway spruce, European larch, white spruce, eastern hemlock.
MoA, MoB, MpB--- Massena	3W	Slight	Moderate	Moderate	Moderate	Red maple----------- Eastern white pine-- Sugar maple---------	75 70 59	3 10 3	Eastern white pine, white spruce, Norway spruce, northern white-cedar.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
MtB------------- Millsite	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- White ash----------- Hophornbeam---------	73 60 75 ---	3 3 3 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
MuC***:									
Millsite-------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- White ash----------- Hophornbeam---------	73 60 75 ---	3 3 3 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
Rock outcrop.									
MuE***:									
Millsite-------	3R	Moderate	Severe	Slight	Slight	Sugar maple--------- Northern red oak---- White ash----------- Hophornbeam---------	73 60 75 ---	3 3 3 ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
Rock outcrop.									
Mv-------------- Minoa	3W	Slight	Moderate	Moderate	Moderate	White ash----------- Northern red oak---- Eastern hemlock----- Eastern redcedar---- American basswood---	69 70 65 --- ---	3 4 --- --- ---	Eastern white pine, Norway spruce, white spruce.
MwA, MwB-------- Muskellunge	3W	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- Red maple-----------	65 70 --- ---	3 4 --- ---	Eastern white pine, Norway spruce, European larch, white spruce.
MxC***:									
Muskellunge----	3W	Moderate	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- Red maple-----------	65 70 --- ---	3 4 --- ---	Eastern white pine, Norway spruce, European larch, white spruce.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
MxC***:									
Millsite-------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	73	3	Eastern white pine, red pine, European larch, Scotch pine, pitch pine, jack pine.
						Northern red oak----	60	3	
						White ash-----------	75	3	
						Hophornbeam---------	---	---	
Rock outcrop.									
NaC------------- Nassau	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, white spruce, Norway spruce, balsam fir, eastern hemlock.
						Eastern hemlock-----	---	---	
						Red maple-----------	---	---	
						American beech------	---	---	
NbF***:									
Nassau---------	2R	Moderate	Severe	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, European larch.
						Red maple-----------	---	---	
						Red spruce----------	---	---	
						Eastern hemlock-----	---	---	
Manlius--------	3R	Moderate	Severe	Slight	Slight	Black cherry--------	70	3	Eastern white pine, Norway spruce, European larch, white spruce, eastern hemlock.
						Sugar maple---------	**61	3	
						White ash-----------	65	3	
NlA, NlB, NlC--- Nellis	2A	Slight	Slight	Slight	Slight	Sugar maple---------	52	2	Eastern white pine, Austrian pine, Norway spruce, black walnut, European larch, Douglas-fir. white spruce, black locust, hybrid poplar.
						American basswood---	80	4	
						White ash-----------	85	4	
						Black cherry--------	---	---	
						American beech------	---	---	
NlD------------- Nellis	2R	Moderate	Moderate	Slight	Slight	Sugar maple---------	52	2	Eastern white pine, Austrian pine, Norway spruce, black walnut, European larch, Douglas-fir. white spruce, black locust, hybrid poplar.
						American basswood---	80	4	
						White ash-----------	85	4	
						Black cherry--------	---	---	
						American beech------	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns: Erosion hazard	Management concerns: Equip- ment limita- tion	Management concerns: Seedling mortal- ity	Management concerns: Wind- throw hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc- tivity class*	Trees to plant
NmE***:									
Nellis---------	2R	Moderate	Moderate	Slight	Slight	Sugar maple---------	52	2	Eastern white pine, Austrian pine, Norway spruce, black walnut, European larch, Douglas-fir. white spruce, black locust, hybrid poplar.
						American basswood---	80	4	
						White ash-----------	85	4	
						Black cherry--------	---	---	
						American beech------	---	---	
Madrid---------	3R	Moderate	Moderate	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, white spruce, European larch, red pine, Scotch pine.
						American basswood---	---	---	
						Black cherry--------	80	4	
						White ash-----------	---	---	
Nn-------------- Newstead	3W	Slight	Severe	Severe	Severe	Red maple-----------	65	3	Eastern white pine, white spruce.
						Eastern white pine--	65	8	
						White ash-----------	65	3	
						Eastern hemlock-----	55	---	
NoA, NoB, NpB--- Niagara	3W	Slight	Moderate	Moderate	Moderate	Sugar maple---------	65	3	Eastern white pine, white spruce, Norway spruce, hybrid poplar.
						Northern red oak----	70	4	
						White ash-----------	75	3	
						Black cherry--------	70	3	
Pa-------------- Palms	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	
						Silver maple--------	---	---	
						Green ash-----------	---	---	
						Quaking aspen-------	---	---	
						Northern white-cedar	---	---	
						Black ash-----------	---	---	
PhA, PhB-------- Phelps	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, black locust, Norway spruce, European larch, white spruce, northern white-cedar, black walnut, hybrid poplar.
						White ash-----------	84	4	
						American beech------	---	---	
						Eastern redcedar----	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
PkB**:									
Pinckney	3A	Slight	Slight	Slight	Slight	Sugar maple	66	3	White spruce, Norway spruce, European larch, eastern white pine.
						American beech	---	---	
						Hemlock	---	---	
						Yellow birch	59	---	
						American basswood	---	---	
						Black cherry	70	---	
Ensley	3W	Slight	Severe	Severe	Severe	Red maple	62	3	
						Balsam fir	60	8	
						American basswood	---	---	
						White ash	---	---	
						Yellow birch	---	---	
						Red spruce	---	---	
PoB, PoC Plainfield	3S	Slight	Moderate	Moderate	Slight	Northern red oak	62	3	Red pine, eastern white pine, jack pine, pitch pine.
						Red pine	55	5	
						Eastern white pine	66	8	
						Black oak	---	---	
						White oak	---	---	
PpD***:									
Plainfield	3R	Moderate	Severe	Moderate	Slight	Northern red oak	62	3	Red pine, eastern white pine, jack pine, pitch pine.
						Red pine	55	5	
						Jack pine	49	5	
						Eastern white pine	66	8	
						Black oak	---	---	
						White oak	---	---	
Windsor	2S	Slight	Moderate	Severe	Slight	Northern red oak	52	2	Eastern white pine, red pine, Scotch pine, pitch pine, jack pine.
						Eastern white pine	57	7	
						Quaking aspen	---	---	
						White oak	---	---	
						Gray birch	---	---	
Ps Pootatuck	10A	Slight	Slight	Slight	Slight	Eastern white pine	75	10	Eastern white pine, white spruce, Norway spruce, northern white-cedar.
						Silver maple	---	---	
						Red maple	60	3	
						Yellow birch	60	3	
						Gray birch	---	---	
QeB***:									
Quetico	5D	Severe	Severe	Moderate	Severe	Eastern white pine	35	5	White spruce.
						Northern red oak	---	---	
						Hophornbeam	---	---	
						Quaking aspen	35	2	
Rock outcrop.									

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
RhA, RhB-------- Rhinebeck	3W	Slight	Moderate	Slight	Slight	Red maple----------- Northern red oak---- Eastern white pine-- Sugar maple--------- American beech------ Eastern redcedar---- Elm----------------- Hophornbeam---------	70 70 75 65 --- --- --- ---	3 4 10 3 --- --- --- ---	Eastern white pine, Norway spruce, European larch, white spruce.
RkC***: Rhinebeck------	3W	Moderate	Moderate	Slight	Slight	Red maple----------- Northern red oak---- Eastern white pine-- Sugar maple--------- American beech------ Eastern redcedar---- Elm----------------- Hophornbeam---------	70 70 75 65 --- --- --- ---	3 4 10 3 --- --- --- ---	Eastern white pine, Norway spruce, European larch, white spruce.
Chatfield------	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- White ash----------- American beech------ Hophornbeam---------	65 70 75 --- ---	3 4 3 --- ---	Eastern white pine, red pine, European larch, Scotch pine, pitch pine.
Rock outcrop.									
Rn-------------- Rhinebeck Variant	3W	Slight	Moderate	Slight	Slight	Red maple----------- Northern red oak---- Eastern white pine-- Sugar maple--------- American beech------ Eastern redcedar---- Elm-----------------	70 70 75 65 --- --- ---	3 4 10 3 --- --- ---	Eastern white pine, Norway spruce, European larch, white spruce.
Ru-------------- Ruse	5W	Slight	Severe	Severe	Severe	Balsam fir---------- Black ash----------- Northern white-cedar White ash----------- Gray birch---------- Quaking aspen------- Elm-----------------	40 --- --- --- --- --- ---	5 --- --- --- --- --- ---	
Sc-------------- Scarboro	7W	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------- Atlantic white-cedar Gray birch---------- Quaking aspen-------	56 50 45 --- ---	7 2 --- --- ---	Northern white-cedar.
SdA, SdB-------- Scriba	3W	Slight	Moderate	Moderate	Moderate	Sugar maple--------- Black cherry-------- Red maple----------- American basswood--- Eastern hemlock----- White ash-----------	60 65 --- --- --- ---	3 3 --- --- --- ---	Eastern white pine, white spruce, Norway spruce, northern white-cedar.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Sh-------------- Shaker	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	Eastern white pine, white spruce, northern white-cedar.
						Eastern white pine--	55	6	
						American basswood---	---	---	
						Bitternut hickory---	---	---	
						White ash-----------	---	---	
SoB, SoC-------- Sodus	3A	Slight	Slight	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, black locust, white spruce, Norway spruce, European larch, Austrian pine, black walnut, hybrid poplar.
						Black cherry--------	70	3	
						Northern red oak----	70	4	
						American basswood---	---	---	
						American beech------	---	---	
						White oak-----------	---	---	
SoD------------- Sodus	3R	Slight	Moderate	Slight	Slight	Sugar maple---------	65	3	Eastern white pine, black locust, white spruce, Norway spruce, European larch, Austrian pine, black walnut, hybrid poplar.
						Black cherry--------	70	3	
						Northern red oak----	70	4	
						American basswood---	---	---	
						American beech------	---	---	
						White oak-----------	---	---	
Su, Sv---------- Sun	3W	Slight	Severe	Severe	Severe	Red maple-----------	65	3	
						Northern white-cedar	---	---	
						Black ash-----------	---	---	
Te-------------- Teel	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, black walnut, black locust, European larch, hybrid poplar, eastern redcedar, northern white-cedar, Austrian pine.
						American basswood---	---	---	
						White ash-----------	85	4	
						Bitternut hickory---	---	---	
VeB------------- Vergennes	3C	Slight	Moderate	Severe	Slight	Sugar maple---------	60	3	Eastern white pine, eastern redcedar, Norway spruce, northern white-cedar, Austrian pine, white spruce, black locust, larch, hybrid poplar.
						Eastern white pine--	65	8	
						Northern red oak----	58	3	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
VeC: Vergennes	3C	Moderate	Moderate	Severe	Slight	Sugar maple	60	3	Eastern white pine, eastern redcedar, Norway spruce, northern white-cedar, Austrian pine, white spruce, black locust, larch, hybrid poplar.
						Eastern white pine	65	8	
						Northern red oak	58	3	
Wa: Wareham	3W	Slight	Severe	Severe	Severe	Red maple	65	3	Eastern white pine.
						Eastern white pine	62	8	
						Quaking aspen	---	---	
						Black ash	---	---	
						Black cherry	---	---	
We: Wayland	3W	Slight	Severe	Severe	Severe	Red maple	65	3	White spruce, northern white-cedar, eastern hemlock.
						American basswood	---	---	
						Eastern hemlock	---	---	
Wh: Whately	2W	Slight	Severe	Severe	Severe	Red maple	50	2	
						Black ash	---	---	
						Silver maple	---	---	
Wk: Willette	2W	Slight	Severe	Severe	Severe	Red maple	51	2	
						Silver maple	76	2	
						Northern white-cedar	27	---	
						Tamarack	45	---	
						Black ash	---	---	
WmB: Williamson	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, Norway spruce, white spruce, northern white-cedar.
						Eastern white pine	75	10	
						American beech	---	---	
						Black cherry	---	---	
						White ash	---	---	
WnB: Wilpoint	3C	Slight	Moderate	Moderate	Slight	Sugar maple	60	3	Eastern white pine, Norway spruce, white spruce, northern white-cedar, Austrian pine, larch, black locust, eastern redcedar, hybrid poplar.
						Northern white-cedar	---	---	
						Northern red oak	58	3	
						Eastern white pine	65	8	
						Eastern hemlock	---	---	
						White ash	65	3	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
WnC------------- Wilpoint	3C	Moderate	Moderate	Moderate	Slight	Sugar maple--------- Northern white-cedar Northern red oak---- Eastern white pine-- Eastern hemlock----- White ash-----------	60 --- 58 65 --- 65	3 --- 3 8 --- 3	Eastern white pine, Norway spruce, white spruce, northern white-cedar, Austrian pine, larch, black locust, eastern redcedar, hybrid poplar.
WoB, WoC-------- Windsor	2S	Slight	Slight	Severe	Slight	Northern red oak---- Eastern white pine-- Quaking aspen------- Gray birch---------- White oak-----------	52 57 --- --- ---	2 7 --- --- ---	Eastern white pine, red pine, Scotch pine, pitch pine, jack pine.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** The site index for sugar maple is based on data from five or more plots.

*** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AgA------------------- Agawam	Slight----------	Slight----------	Slight----------	Slight----------	Slight.
AgB------------------- Agawam	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
AhA, AhB-------------- Allis	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
AlA, AlB-------------- Alton	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight----------	Moderate: small stones, droughty.
AlC------------------- Alton	Moderate. slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight----------	Moderate: small stones, droughty.
AlD------------------- Alton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
AlE------------------- Alton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
AmA------------------- Amenia	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Moderate: wetness.	Moderate: wetness.
AmB------------------- Amenia	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
AnA, AnB-------------- Angola	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
ArB------------------- Arkport	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
ArC------------------- Arkport	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: droughty, slope.
Be*. Beaches					
BfF------------------- Benson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: small stones, slope, thin layer.
BgB*:					
Benson----------------	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Moderate: large stones.	Severe: small stones, thin layer.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BgB*:					
Galoo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Severe: thin layer.
BhB Bice	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
BhC Bice	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
BhD Bice	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
BhF Bice	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BkC Bice	Moderate: large stones, small stones.	Moderate: large stones, small stones.	Severe: slope, large stones, small stones.	Slight	Moderate: large stones, small stones.
BlB*:					
Bice	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
Haights	Moderate: wetness.	Moderate: wetness, small stones.	Moderate: slope, small stones.	Slight	Moderate: droughty.
BlC*:					
Bice	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Haights	Moderate: slope, wetness.	Moderate: slope, wetness, small stones.	Severe: slope.	Slight	Moderate: droughty.
BmB*:					
Bice	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: large stones.
Pinckney	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
BmC*:					
Bice	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: large stones, slope.
Pinckney	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Slight	Moderate: droughty, slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BmD*:					
Bice	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Pinckney	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Moderate: slope.	Severe: slope.
BnA, BnB Blasdell	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
BnC Blasdell	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: slope, small stones.
BoA Bombay	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Moderate: wetness.	Moderate: wetness.
BoB Bombay	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
BpB Bonaparte	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Severe: droughty.
BpC Bonaparte	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Severe: droughty.
Bt Boots	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Ca Canandaigua	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cb Canandaigua	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: wetness.
Cc Carbondale	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Cd Carlisle	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
ChB Chatfield	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty, thin layer.
CkC*:					
Chatfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, thin layer.
Rock outcrop.					

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CkE*:					
Chatfield	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
ClA, ClB Chaumont	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey, erodes easily.	Severe: wetness, too clayey.
CmA, CmB Claverack	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
CnB Collamer	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: wetness.
CnC, CnC3 Collamer	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
CoB Collamer	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, percs slowly.	Slight	Moderate: wetness.
Cp Covington	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey, erodes easily.	Severe: wetness, too clayey.
DcB Danley	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
DcC Danley	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
DcD Danley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
DdA, DdB Darien	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
DdC Darien	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
DeB Deerfield	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Slight	Moderate: wetness.
Dp*. Dumps					

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ElA------------------ Elmridge	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
ElB------------------ Elmridge	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
Em------------------- Ensley	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
En------------------- Ensley	Severe: ponding.	Severe: ponding.	Severe: large stones, ponding.	Severe: ponding.	Severe: ponding.
FaB------------------ Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
Fu*: Fluvaquents.					
Udifluvents.					
GaA------------------ Galen	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
GaB------------------ Galen	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
GbB*, GcB*: Galoo----------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
Rock outcrop.					
GlA------------------ Galway	Moderate: wetness.	Moderate: wetness.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.
GlB------------------ Galway	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
GlC------------------ Galway	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope, wetness.
GmC------------------ Galway	Moderate: large stones.	Moderate: large stones, wetness.	Severe: large stones, slope, small stones.	Moderate: wetness.	Moderate: small stones, large stones.
Gr------------------- Granby	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
GtA, GtB------------- Groton	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight----------	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GtC------------------- Groton	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight----------	Moderate: small stones, droughty, slope.
GtD------------------- Groton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
GtE------------------- Groton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
GuB------------------- Groton Variant	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight----------	Severe: small stones, droughty.
Gv-------------------- Guffin	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, percs slowly.	Severe: wetness, too clayey, erodes easily.	Severe: wetness, too clayey.
Gw-------------------- Gulf	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
HaB*:					
Haights--------------	Moderate: wetness.	Moderate: wetness, small stones.	Moderate: slope, small stones.	Slight----------	Moderate: droughty.
Gulf-----------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Hb-------------------- Halsey	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
Hc-------------------- Hamlin	Severe: flooding.	Slight----------	Moderate: flooding.	Slight----------	Moderate: flooding.
HeB------------------- Heuvelton	Moderate: wetness.	Moderate--------	Moderate: slope, small stones.	Severe: erodes easily.	Moderate.
HeC------------------- Heuvelton	Moderate: slope, wetness.	Moderate--------	Severe: slope.	Severe: erodes easily.	Moderate.
HmB*:					
Heuvelton------------	Moderate: wetness.	Moderate--------	Moderate: slope, small stones.	Severe: erodes easily.	Moderate.
Millsite-------------	Slight----------	Slight----------	Moderate: slope, small stones.	Slight----------	Moderate: droughty.
Rock outcrop.					

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HnB------------------- Hinckley	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight----------	Severe: small stones, droughty.
HoB*:					
Hinckley-------------	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight----------	Severe: small stones, droughty.
Hoosic---------------	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight----------	Moderate: droughty, small stones.
HoE*:					
Hinckley-------------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, droughty, slope.
Hoosic---------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
HpB*:					
Hollis---------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
Galoo----------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
HrB*:					
Hollis---------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
Rock outcrop.					
HuB------------------- Hudson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
HuC------------------- Hudson	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
HvB*:					
Hudson---------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
Chatfield------------	Slight----------	Slight----------	Severe: small stones.	Slight----------	Moderate: droughty, thin layer.
Rock outcrop.					
HyE3*:					
Hudson---------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HyE3*:					
Vergennes	Severe: slope, wetness, percs slowly.	Severe: slope, percs slowly.	Severe: slope, wetness.	Severe: slope, erodes easily.	Severe: slope.
InB*:					
Insula	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: small stones, depth to rock.
Quetico	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: depth to rock.
IoB*:					
Insula	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Moderate: large stones.	Severe: small stones, depth to rock.
Rock outcrop.					
IrB Ira	Severe: percs slowly.	Severe: percs slowly.	Severe: small stones, percs slowly.	Moderate: wetness.	Moderate: small stones, wetness.
IrC Ira	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, small stones, percs slowly.	Moderate: wetness.	Moderate: small stones, wetness.
Ju Junius	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
KgA, KgB Kingsbury	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Kh*:					
Kingsbury	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Livingston	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, excess humus, wetness.	Severe: wetness, too clayey, excess humus.	Severe: wetness, too clayey.
LaB*:					
Lagross	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
Haights	Moderate: wetness.	Moderate: wetness, small stones.	Moderate: slope, small stones.	Slight	Moderate: droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LaC*:					
Lagross	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
Haights	Moderate: slope, wetness.	Moderate: slope, wetness, small stones.	Severe: slope.	Slight	Moderate: droughty.
Lb Lamson	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Lc Livingston	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, excess humus, wetness.	Severe: wetness, too clayey, excess humus.	Severe: wetness, too clayey.
Ld Livingston	Severe: flooding, wetness, too clayey.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, flooding.	Severe: wetness, too clayey, erodes easily.	Severe: wetness, flooding, too clayey.
LoA Lowville	Slight	Slight	Moderate: small stones.	Slight	Slight.
LoB Lowville	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
LoC Lowville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
LoD Lowville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Ma Madalin	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
MdA Madrid	Slight	Slight	Moderate: small stones.	Slight	Slight.
MdB Madrid	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
MdC Madrid	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
MdD Madrid	Severe: slope.	Severe: slope.	Severe: slope.	Slope	Severe: slope.
MnB Manlius	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
MnC Manlius	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: small stones, slope.	Slight	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MoA, MoB: Massena	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MpB: Massena	Severe: wetness.	Severe: wetness.	Severe: large stones, small stones.	Severe: wetness.	Severe: wetness.
MtB: Millsite	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
MuC*:					
Millsite	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Rock outcrop.					
MuE*:					
Millsite	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
Mv: Minoa	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MwA, MwB: Muskellunge	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
MxC*:					
Muskellunge	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Millsite	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Rock outcrop.					
NaC: Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones.	Slight	Severe: thin layer.
NbF*:					
Nassau	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe	Severe: slope, thin layer.
Manlius	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Severe: slope.	Severe: slope.
NlA: Nellis	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: small stones.	Slight	Moderate: droughty.
NlB: Nellis	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Moderate: droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
NlC------------------- Nellis	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope, droughty.
NlD------------------- Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
NmE*:					
Nellis---------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Madrid---------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nn------------------- Newstead	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NoA, NoB, NpB--------- Niagara	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Pa------------------- Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
PhA, PhB-------------- Phelps	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, large stones, wetness.
PkB*:					
Pinckney-------------	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
Ensley---------------	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Pm*, Pn*. Pits					
PoB------------------ Plainfield	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
PoC------------------ Plainfield	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
PpD*:					
Plainfield-----------	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty, slope.
Windsor--------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Ps------------------- Pootatuck	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.	Severe: flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
QeB*:					
Quetico	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: depth to rock, thin layer.
Rock outcrop.					
RhA, RhB Rhinebeck	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
RkC*:					
Rhinebeck	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Chatfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, thin layer.
Rock outcrop.					
Rn Rhinebeck Variant	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ru Ruse	Severe: ponding, depth to rock.	Severe: ponding, depth to rock.	Severe: ponding, depth to rock.	Severe: ponding.	Severe: ponding, depth to rock.
Sa*:					
Saprists.					
Aquents.					
Sc Scarboro	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
SdA, SdB Scriba	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness, droughty.
Sh Shaker	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
SoB Sodus	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Slight	Moderate: small stones.
SoC Sodus	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: slope, small stones.	Slight	Moderate: small stones, slope.
SoD Sodus	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Su Sun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Sv Sun	Severe: wetness.	Severe: wetness.	Severe: large stones, small stones, wetness.	Severe: wetness.	Severe: wetness.
Te Teel	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Severe: erodes easily.	Moderate: wetness, flooding.
Ua, Ub. Udorthents					
Uc*: Udorthents.					
Udifluvents.					
Ur*. Urban land					
VeB Vergennes	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
VeC Vergennes	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness, slope.
Wa Wareham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
We Wayland	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding.
Wh Whately	Severe: ponding, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: ponding, excess humus, percs slowly.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Wk Willette	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
WmB Williamson	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
WnB Wilpoint	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Moderate: wetness.
WnC Wilpoint	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: wetness, slope.
WoB Windsor	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
WoC Windsor	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AgA----------------- Agawam	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AgB----------------- Agawam	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AhA----------------- Allis	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
AhB----------------- Allis	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
AlA, AlB, AlC------- Alton	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
AlD----------------- Alton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
AlE----------------- Alton	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
AmA----------------- Amenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
AmB----------------- Amenia	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AnA----------------- Angola	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AnB----------------- Angola	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ArB----------------- Arkport	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ArC----------------- Arkport	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Be*. Beaches										
BfF----------------- Benson	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
BgB*:										
Benson-------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Galoo--------------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
BhB----------------- Bice	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BhC: Bice	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BhD: Bice	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BhF: Bice	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
BkC: Bice	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BlB*:										
Bice	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Haights	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BlC*:										
Bice	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Haights	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BmB*:										
Bice	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pinckney	Good	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
BmC*:										
Bice	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Pinckney	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
BmD*:										
Bice	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pinckney	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BnA, BnB, BnC: Blasdell	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
BoA: Bombay	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BoB: Bombay	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BpB, BpC: Bonaparte	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Bt----------------- Boots	Good	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ca, Cb------------- Canandaigua	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Very poor.	Poor	Good.
Cc----------------- Carbondale	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Cd----------------- Carlisle	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
ChB---------------- Chatfield	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
CkC*:										
Chatfield---------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
CkE*:										
Chatfield---------	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.										
ClA---------------- Chaumont	Fair	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Poor.
ClB---------------- Chaumont	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
CmA, CmB----------- Claverack	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
CnB---------------- Collamer	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CnC, CnC3---------- Collamer	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CoB---------------- Collamer	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cp----------------- Covington	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
DcB---------------- Danley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DcC---------------- Danley	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DcD---------------- Danley	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
DdA---------------- Darien	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
DdB----------------- Darien	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DdC----------------- Darien	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
DeB----------------- Deerfield	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
Dp*. Dumps										
ElA----------------- Elmridge	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ElB----------------- Elmridge	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Em------------------ Ensley	Good	Good	Poor	Poor	Poor	Good	Good	Good	Poor	Good.
En------------------ Ensley	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
FaB----------------- Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Fu*:										
Fluvaquents.										
Udifluvents.										
GaA----------------- Galen	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GaB----------------- Galen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GbB*, GcB*:										
Galoo--------------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Rock outcrop.										
GlA, GlB------------ Galway	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GlC----------------- Galway	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GmC----------------- Galway	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
Gr------------------ Granby	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Poor	Good.
GtA, GtB, GtC, GtD- Groton	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
GtE: Groton	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
GuB: Groton Variant	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Gv: Guffin	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Gw: Gulf	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
HaB*:										
Haights	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gulf	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Hb: Halsey	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Hc: Hamlin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HeB: Heuvelton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HeC: Heuvelton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HmB*:										
Heuvelton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Millsite	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
HnB: Hinckley	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HoB*:										
Hinckley	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Hoosic	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
HoE*:										
Hinckley	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Hoosic	Very poor.	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
HpB*:										
Hollis	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
HpB*:										
Galoo-------------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
HrB*:										
Hollis------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
HuB---------------- Hudson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HuC---------------- Hudson	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HvB*:										
Hudson------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Chatfield---------	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
HyE3*:										
Hudson------------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Vergennes---------	Very poor.	Fair	Poor	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
InB*:										
Insula------------	Poor	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
Quetico-----------	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
IoB*:										
Insula------------	Poor	Poor	Poor	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
IrB---------------- Ira	Good	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
IrC---------------- Ira	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Ju----------------- Junius	Poor	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Poor	Poor.
KgA---------------- Kingsbury	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
KgB---------------- Kingsbury	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Kh*:										
Kingsbury	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
Livingston	Very poor.	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Poor	Fair.
LaB*:										
Lagross	Good	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Haights	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LaC*:										
Lagross	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Haights	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Lb Lamson	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Lc Livingston	Very poor.	Poor	Poor	Poor	Poor	Poor	Fair	Poor	Poor	Fair.
Ld Livingston	Very poor.	Poor	Poor	Poor	Poor	Poor	Good	Poor	Poor	Good.
LoA Lowville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoB Lowville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoC Lowville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LoD Lowville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ma Madalin	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MdA Madrid	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MdB Madrid	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MdC Madrid	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MdD Madrid	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MnB Manlius	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MnC---------------- Manlius	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
MoA---------------- Massena	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MoB---------------- Massena	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MpB---------------- Massena	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
MtB---------------- Millsite	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
MuC*:										
Millsite----------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
MuE*:										
Millsite----------	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop.										
Mv----------------- Minoa	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MwA---------------- Muskellunge	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MwB---------------- Muskellunge	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MxC*:										
Muskellunge-------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Millsite----------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
NaC---------------- Nassau	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
NbF*:										
Nassau------------	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Manlius-----------	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
NlA---------------- Nellis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NlB---------------- Nellis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
NlC: Nellis	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NlD: Nellis	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NmE*:										
Nellis	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Madrid	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Nn: Newstead	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
NoA: Niagara	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NoB, NpB: Niagara	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
Pa: Palms	Good	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good.
PhA: Phelps	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PhB: Phelps	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PkB*:										
Pinckney	Good	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Ensley	Good	Good	Poor	Poor	Poor	Good	Good	Good	Poor	Good.
Pm*, Pn*. Pits										
PoB: Plainfield	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
PoC: Plainfield	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
PpD*:										
Plainfield	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Windsor	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ps: Pootatuck	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
QeB*:										
Quetico	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
QeB*: Rock outcrop.										
RhA: Rhinebeck	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RhB: Rhinebeck	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RkC*: Rhinebeck	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Chatfield	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
Rn: Rhinebeck Variant	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ru: Ruse	Poor	Fair	Fair	Poor	Poor	Good	Poor	Fair	Poor	Fair.
Sa*: Saprists.										
Aquents.										
Sc: Scarboro	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
SdA: Scriba	Good	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
SdB: Scriba	Good	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
Sh: Shaker	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
SoB: Sodus	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SoC: Sodus	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SoD: Sodus	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Su, Sv: Sun	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Te: Teel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Ua, Ub. Udorthents										

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Uc*:										
Udorthents.										
Udifluvents.										
Ur*. Urban land										
VeB: Vergennes	Fair	Fair	Poor	Good	Good	Poor	Very poor.	Fair	Fair	Very poor.
VeC: Vergennes	Fair	Fair	Poor	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
Wa: Wareham	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Poor	Fair.
We: Wayland	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Wh: Whately	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Wk: Willette	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WmB: Williamson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WnB, WnC: Wilpoint	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
WoB, WoC: Windsor	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AgA Agawam	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
AgB Agawam	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
AhA, AhB Allis	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
AlA Alton	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: small stones, droughty.
AlB Alton	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
AlC Alton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, droughty.
AlD, AlE Alton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AmA Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
AmB Amenia	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
AnA, AnB Angola	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
ArB Arkport	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
ArC Arkport	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: droughty, slope.
Be*. Beaches						
BfF Benson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: small stones, slope, thin layer.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BgB*:						
Benson	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, thin layer.
Galoo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
BhB Bice	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
BhC Bice	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
BhD, BhF Bice	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BkC Bice	Slight	Slight	Slight	Moderate: slope.	Moderate: small stones, large stones.	Moderate: large stones, small stones.
BlB*:						
Bice	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
Haights	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: droughty.
BlC*:						
Bice	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Haights	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: slope, wetness.	Moderate: droughty.
BmB*:						
Bice	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: large stones.
Pinckney	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.
BmC*:						
Bice	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Pinckney	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: droughty, slope.
BmD*:						
Bice	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BmD*: Pinckney	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BnA Blasdell	Slight	Slight	Slight	Slight	Moderate: frost action.	Moderate: small stones.
BnB Blasdell	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones.
BnC Blasdell	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, small stones.
BoA Bombay	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness.
BoB Bombay	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.
BpB Bonaparte	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
BpC Bonaparte	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
Bt Boots	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
Ca Canandaigua	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Cb Canandaigua	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: wetness.
Cc Carbondale	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
Cd Carlisle	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
ChB Chatfield	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: droughty, thin layer.
CkC*: Chatfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: droughty, slope, thin layer.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CkC*:						
Rock outcrop.						
CkE*:						
Chatfield--------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
ClA, ClB---------- Chaumont	Severe: depth to rock, wetness.	Severe: wetness, shrink-swell.	Severe: wetness, depth to rock, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.
CmA--------------- Claverack	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
CmB--------------- Claverack	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
CnB--------------- Collamer	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
CnC, CnC3--------- Collamer	Severe: cutbanks cave, wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
CoB--------------- Collamer	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
Cp---------------- Covington	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, too clayey.
DcB--------------- Danley	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action.	Moderate: wetness.
DcC--------------- Danley	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
DcD--------------- Danley	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
DdA, DdB---------- Darien	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
DdC--------------- Darien	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DeB--------------- Deerfield	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness.	Moderate: wetness.
Dp*. Dumps						
ElA--------------- Elmridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength, frost action.	Moderate: wetness.
ElB--------------- Elmridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength, frost action.	Moderate: wetness.
Em, En------------ Ensley	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
FaB--------------- Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Fu*: Fluvaquents.						
Udifluvents.						
GaA--------------- Galen	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness.
GaB--------------- Galen	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.
GbB*, GcB*: Galoo------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
GlA--------------- Galway	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: wetness.
GlB--------------- Galway	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: wetness.
GlC--------------- Galway	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: slope.	Moderate: depth to rock, slope, wetness.	Moderate: slope, wetness.
GmC--------------- Galway	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Severe: depth to rock, wetness.	Moderate: slope, depth to rock, wetness.	Moderate: depth to rock, wetness.	Moderate: small stones, large stones.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Gr----------------- Granby	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
GtA---------------- Groton	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: small stones, droughty.
GtB---------------- Groton	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: small stones, droughty.
GtC---------------- Groton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
GtD, GtE----------- Groton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GuB---------------- Groton Variant	Severe: depth to rock, cutbanks cave.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Severe: small stones, droughty.
Gv----------------- Guffin	Severe: depth to rock, wetness.	Severe: wetness, shrink-swell.	Severe: wetness, depth to rock, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.
Gw----------------- Gulf	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
HaB*:						
Haights-----------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: droughty.
Gulf--------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Hb----------------- Halsey	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Hc----------------- Hamlin	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
HeB---------------- Heuvelton	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate.
HeC---------------- Heuvelton	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HmB*:						
Heuvelton	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate.
Millsite	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: droughty.
Rock outcrop.						
HnB Hinckley	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
HoB*:						
Hinckley	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
Hoosic	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, small stones.
HoE*:						
Hinckley	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
Hoosic	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HpB*:						
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Galoo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
HrB*:						
Hollis	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
HuB Hudson	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action, low strength.	Moderate: wetness.
HuC Hudson	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: wetness, slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HvB*:						
Hudson-----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action, low strength.	Moderate: wetness.
Chatfield--------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: droughty, thin layer.
Rock outcrop.						
HyE3*:						
Hudson-----------	Severe: slope, wetness.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action, low strength.	Severe: slope.
Vergennes--------	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: wetness, slope.	Severe: low strength, slope.	Severe: slope.
InB*:						
Insula-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
Quetico----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
IoB*:						
Insula-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
Rock outcrop.						
IrB--------------- Ira	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones, wetness.
IrC--------------- Ira	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, wetness.
Ju---------------- Junius	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
KgA, KgB---------- Kingsbury	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.
Kh*:						
Kingsbury--------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Kh*:						
Livingston-------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.
LaB*:						
Lagross----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: small stones.
Haights----------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: droughty.
LaC*:						
Lagross----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, slope.
Haights----------	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: slope, wetness.	Moderate: droughty.
Lb--------------- Lamson	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
Lc--------------- Livingston	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness, frost action.	Severe: wetness, too clayey.
Ld--------------- Livingston	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding, too clayey.
LoA-------------- Lowville	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
LoB-------------- Lowville	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
LoC-------------- Lowville	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
LoD-------------- Lowville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ma--------------- Madalin	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength, frost action.	Severe: wetness.
MdA-------------- Madrid	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
MdB-------------- Madrid	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MdC--------------- Madrid	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
MdD--------------- Madrid	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MnB--------------- Manlius	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones, droughty.
MnC--------------- Manlius	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: small stones, droughty.
MoA, MoB, MpB----- Massena	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
MtB--------------- Millsite	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: droughty.
MuC*:						
Millsite---------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock.	Moderate: droughty, slope.
Rock outcrop.						
MuE*:						
Millsite---------	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
Mv---------------- Minoa	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
MwA, MwB---------- Muskellunge	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action, wetness.	Severe: wetness.
MxC*:						
Muskellunge------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: low strength, frost action, wetness.	Severe: wetness.
Millsite---------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock.	Moderate: droughty, slope.
Rock outcrop.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
NaC: Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
NbF*:						
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer.
Manlius	Severe: depth to rock, slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
NlA: Nellis	Moderate: dense layer.	Slight	Slight	Slight	Moderate: frost action.	Moderate: droughty.
NlB: Nellis	Moderate: dense layer.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
NlC: Nellis	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, droughty.
NlD: Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NmE*:						
Nellis	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Madrid	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Nn: Newstead	Severe: depth to rock, wetness.	Severe: wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
NoA, NoB, NpB: Niagara	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Pa: Palms	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
PhA: Phelps	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: small stones, large stones, wetness.
PhB: Phelps	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: small stones, large stones, wetness.
PkB*:						
Pinckney	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
PkB*:						
Ensley	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
Pm*, Pn*. Pits						
PoB Plainfield	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
PoC Plainfield	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
PpD*:						
Plainfield	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
Windsor	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ps Pootatuck	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.
QeB*:						
Quetico	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.						
RhA, RhB Rhinebeck	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action, wetness.	Severe: wetness.
RkC*:						
Rhinebeck	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: low strength, frost action, wetness.	Severe: wetness.
Chatfield	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: droughty, slope, thin layer.
Rock outcrop.						
Rn Rhinebeck Variant	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Ru Ruse	Severe: depth to rock, ponding.	Severe: ponding, depth to rock.	Severe: ponding, depth to rock.	Severe: ponding, depth to rock.	Severe: depth to rock, ponding, frost action.	Severe: ponding, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Sa*:						
Saprists.						
Aquents.						
Sc----------------- Scarboro	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
SdA, SdB---------- Scriba	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, droughty.
Sh----------------- Shaker	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
SoB---------------- Sodus	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones.
SoC---------------- Sodus	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, slope.
SoD---------------- Sodus	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Su, Sv------------- Sun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Te----------------- Teel	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: wetness, flooding.
Ua, Ub. Udorthents						
Uc*:						
Udorthents.						
Udifluvents.						
Ur*. Urban land						
VeB---------------- Vergennes	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
VeC---------------- Vergennes	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength.	Moderate: wetness, slope.
Wa----------------- Wareham	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
We---------------- Wayland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Wh---------------- Whately	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding, excess humus.
Wk---------------- Willette	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, shrink-swell.	Severe: ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
WmB--------------- Williamson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
WnB--------------- Wilpoint	Severe: depth to rock, wetness.	Severe: shrink-swell.	Severe: wetness, depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
WnC--------------- Wilpoint	Severe: depth to rock, wetness.	Severe: shrink-swell.	Severe: wetness, depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness, slope.
WoB--------------- Windsor	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
WoC--------------- Windsor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "poor," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AgA, AgB: Agawam	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
AhA, AhB: Allis	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, small stones.
AlA, AlB: Alton	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
AlC: Alton	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
AlD, AlE: Alton	Severe: slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
AmA: Amenia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AmB: Amenia	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
AnA, AnB: Angola	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, wetness.
ArB: Arkport	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy, thin layer.
ArC: Arkport	Moderate: slope.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: slope, too sandy, thin layer.
Be*. Beaches					
BfF: Benson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
BgB*:					
Benson	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BgB*:					
Galoo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
BhB Bice	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
BhC Bice	Moderate: slope, percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
BhD, BhF Bice	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope, small stones.
BkC Bice	Moderate: percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
BlB*:					
Bice	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Haights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones.
BlC*:					
Bice	Moderate: slope, percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Haights	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones.
BmB*:					
Bice	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Pinckney	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Poor: small stones.
BmC*:					
Bice	Moderate: slope, percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Pinckney	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Poor: small stones.
BmD*:					
Bice	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope, small stones.
Pinckney	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BnA, BnB: Blasdell	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
BnC: Blasdell	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
BoA, BoB: Bombay	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
BpB: Bonaparte	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
BpC: Bonaparte	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
Bt: Boots	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
Ca: Canandaigua	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cb: Canandaigua	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
Cc: Carbondale	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
Cd: Carlisle	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: seepage, ponding, excess humus.	Severe: seepage, ponding.	Poor: ponding, excess humus.
ChB: Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
CkC*:					
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					
CkE*:					
Chatfield	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: area reclaim, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CkE*: Rock outcrop.					
ClA, ClB----------- Chaumont	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, hard to pack.
CmA, CmB----------- Claverack	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey.
CnB---------------- Collamer	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
CnC, CnC3---------- Collamer	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, slope, wetness.
CoB---------------- Collamer	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Severe: wetness.	Fair: area reclaim, too clayey.
Cp----------------- Covington	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness, hard to pack.
DcB---------------- Danley	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Poor: small stones.
DcC---------------- Danley	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Poor: small stones.
DcD---------------- Danley	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: small stones, slope.
DdA, DdB----------- Darien	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
DdC---------------- Darien	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
DeB---------------- Deerfield	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, seepage.
Dp*. Dumps					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ElA------------------ Elmridge	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
ElB------------------ Elmridge	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
Em, En-------------- Ensley	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding.
FaB------------------ Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Fu*: Fluvaquents.					
Udifluvents.					
GaA, GaB------------ Galen	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy.
GbB*, GcB*: Galoo--------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop.					
GlA, GlB------------ Galway	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
GlC, GmC------------ Galway	Severe: depth to rock, wetness.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock.	Poor: area reclaim, small stones.
Gr------------------- Granby	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
GtA, GtB------------ Groton	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
GtC------------------ Groton	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
GtD, GtE------------ Groton	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, seepage, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GuB: Groton Variant	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, too sandy.	Severe: depth to rock, seepage.	Poor: area reclaim, seepage, too sandy.
Gv: Guffin	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, hard to pack.
Gw: Gulf	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
HaB*:					
Haights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones.
Gulf	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
Hb: Halsey	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
Hc: Hamlin	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
HeB: Heuvelton	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey.
HeC: Heuvelton	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey.
HmB*:					
Heuvelton	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey.
Millsite	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					
HnB: Hinckley	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.
HoB*:					
Hinckley	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
HoB*:					
Hoosic	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: small stones, seepage, too sandy.
HoE*:					
Hinckley	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: slope, too sandy, seepage.
Hoosic	Severe: poor filter, slope.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Severe: slope, seepage.	Poor: small stones, seepage, too sandy.
HpB*:					
Hollis	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim, thin layer.
Galoo	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
HrB*:					
Hollis	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim, thin layer.
Rock outcrop.					
HuB Hudson	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HuC Hudson	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
HvB*:					
Hudson	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					
HyE3*:					
Hudson	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: slope, too clayey, wetness.	Severe: slope.	Poor: slope, too clayey, hard to pack.
Vergennes	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope, too clayey.	Severe: wetness, slope.	Poor: too clayey, hard to pack, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
InB*:					
Insula	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
Quetico	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
IoB*:					
Insula	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
Rock outcrop.					
IrB Ira	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: small stones, wetness.
IrC Ira	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Fair: small stones, slope, wetness.
Ju Junius	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy, wetness.
KgA Kingsbury	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
KgB Kingsbury	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Kh*:					
Kingsbury	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Livingston	Severe: wetness, percs slowly.	Moderate: excess humus.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
LaB*:					
Lagross	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
Haights	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LaC*:					
Lagross	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones, seepage.
Haights	Severe: wetness.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones.
Lb Lamson	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding, thin layer.
Lc Livingston	Severe: wetness, percs slowly.	Moderate: excess humus.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Ld Livingston	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
LoA Lowville	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: small stones.
LoB Lowville	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
LoC Lowville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
LoD Lowville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Ma Madalin	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey, hard to pack.
MdA Madrid	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: small stones.
MdB Madrid	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
MdC Madrid	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
MdD Madrid	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
MnB Manlius	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, seepage, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
MnC------------------ Manlius	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, seepage, small stones.
MoA, MoB------------ Massena	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
MpB------------------ Massena	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
MtB------------------ Millsite	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
MuC*:					
Millsite------------	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					
MuE*:					
Millsite------------	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Poor: slope, area reclaim.
Rock outcrop.					
Mv------------------- Minoa	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
MwA, MwB------------ Muskellunge	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
MxC*:					
Muskellunge---------	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Millsite------------	Severe: depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					
NaC------------------ Nassau	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
NbF*:					
Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, area reclaim, small stones.
Manlius	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Poor: area reclaim, seepage, small stones.
NlA Nellis	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Poor: small stones.
NlB Nellis	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
NlC Nellis	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
NlD Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
NmE*:					
Nellis	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Madrid	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Nn Newstead	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, small stones, wetness.
NoA, NoB Niagara	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
NpB Niagara	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Severe: wetness.	Poor: wetness.
Pa Palms	Severe: subsides, ponding.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
PhA, PhB Phelps	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
PkB*:					
Pinckney	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Poor: small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PkB*:					
Ensley	Severe: ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Severe: seepage, ponding.	Poor: ponding.
Pm*, Pn*. Pits					
PoB Plainfield	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
PoC Plainfield	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
PpD*:					
Plainfield	Severe: slope, poor filter.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: too sandy, slope, seepage.
Windsor	Severe: slope, poor filter.	Severe: slope, seepage.	Severe: slope, seepage, too sandy.	Poor: slope, too sandy, seepage.	Poor: slope, too sandy, seepage.
Ps Pootatuck	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy.
QeB*:					
Quetico	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Rock outcrop.					
RhA Rhinebeck	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
RhB Rhinebeck	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
RkC*:					
Rhinebeck	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Chatfield	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: area reclaim.
Rock outcrop.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Rn: Rhinebeck Variant	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Ru: Ruse	Severe: depth to rock, ponding.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage, ponding.	Severe: depth to rock, seepage, ponding.	Poor: depth to rock, ponding.
Sa*: Saprists.					
Aquents.					
Sc: Scarboro	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, small stones.
SdA: Scriba	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
SdB: Scriba	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: small stones, wetness.
Sh: Shaker	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness, seepage.	Poor: too clayey, wetness, hard to pack.
SoB: Sodus	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: wetness.	Moderate: wetness.	Poor: small stones.
SoC: Sodus	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Poor: small stones.
SoD: Sodus	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Su, Sv: Sun	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Te: Teel	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Ua, Ub. Udorthents					
Uc*: Udorthents.					
Udifluvents.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ur*. Urban land					
VeB----------------- Vergennes	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
VeC----------------- Vergennes	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
Wa------------------ Wareham	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, small stones.
We------------------ Wayland	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Wh------------------ Whately	Severe: ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, too clayey.	Severe: ponding, seepage.	Poor: too clayey, ponding.
Wk------------------ Willette	Severe: ponding, percs slowly.	Severe: seepage, excess humus.	Severe: ponding, too clayey.	Severe: seepage, ponding.	Poor: too clayey, hard to pack, ponding.
WmB----------------- Williamson	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: wetness.
WnB----------------- Wilpoint	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
WnC----------------- Wilpoint	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
WoB----------------- Windsor	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Poor: too sandy, seepage.	Poor: too sandy, seepage.
WoC----------------- Windsor	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Poor: too sandy, seepage.	Poor: too sandy, seepage.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AgA, AgB Agawam	Good	Probable	Improbable: excess fines.	Poor: too sandy, area reclaim.
AhA, AhB Allis	Poor: area reclaim, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
AlA, AlB, AlC Alton	Good	Probable	Probable	Poor: small stones, area reclaim.
AlD Alton	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
AlE Alton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
AmA, AmB Amenia	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
AnA, AnB Angola	Poor: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
ArB, ArC Arkport	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Be*. Beaches				
BfF Benson	Poor: area reclaim, slope, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
BgB*: Benson	Poor: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Galoo	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
BhB, BhC Bice	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BhD: Bice	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
BhF: Bice	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
BkC: Bice	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
BlB*, BlC*:				
Bice	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Haights	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
BmB*, BmC*:				
Bice	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Pinckney	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
BmD*:				
Bice	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
Pinckney	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope, area reclaim.
BnA, BnB, BnC: Blasdell	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
BoA, BoB: Bombay	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BpB, BpC: Bonaparte	Good	Probable	Probable	Poor: small stones.
Bt: Boots	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
Ca, Cb: Canandaigua	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Cc------------------- Carbondale	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
Cd------------------- Carlisle	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
ChB------------------ Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
CkC*:				
Chatfield-----------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
CkE*:				
Chatfield-----------	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
ClA, ClB------------- Chaumont	Poor: area reclaim, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
CmA, CmB------------- Claverack	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
CnB------------------ Collamer	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
CnC, CnC3------------ Collamer	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
CoB------------------ Collamer	Fair: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Cp------------------- Covington	Poor: wetness, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
DcB, DcC------------- Danley	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
DcD------------------ Danley	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
DdA, DdB, DdC-------- Darien	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
DeB: Deerfield	Fair: wetness.	Probable	Improbable: excess fines.	Poor: too sandy, thin layer.
Dp*. Dumps				
ElA, ElB: Elmridge	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Em, En: Ensley	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
FaB: Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Fu*: Fluvaquents.				
Udifluvents.				
GaA, GaB: Galen	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
GbB*, GcB*: Galoo	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop.				
GlA, GlB, GlC, GmC: Galway	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Gr: Granby	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
GtA, GtB, GtC: Groton	Good	Probable	Probable	Poor: small stones, area reclaim.
GtD: Groton	Fair: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
GtE: Groton	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
GuB: Groton Variant	Poor: area reclaim.	Improbable: thin layer.	Improbable: thin layer.	Poor: too sandy, small stones, large stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Gv: Guffin	Poor: area reclaim, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Gw: Gulf	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones, area reclaim.
HaB*:				
Haights	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Gulf	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones, area reclaim.
Hb: Halsey	Poor: wetness.	Probable	Probable	Poor: small stones, area reclaim, wetness.
Hc: Hamlin	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
HeB, HeC: Heuvelton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
HmB*:				
Heuvelton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Millsite	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
HnB: Hinckley	Good	Probable	Probable	Poor: too sandy, area reclaim, small stones.
HoB*:				
Hinckley	Good	Probable	Probable	Poor: too sandy, area reclaim, small stones.
Hoosic	Good	Probable	Probable	Poor: small stones, area reclaim.
HoE*:				
Hinckley	Poor: slope.	Probable	Probable	Poor: slope, too sandy, small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HoE*:				
Hoosic	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
HpB*:				
Hollis	Poor: area reclaim, thin layer.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: area reclaim, thin layer.
Galoo	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
HrB*:				
Hollis	Poor: area reclaim, thin layer.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: area reclaim, thin layer.
Rock outcrop.				
HuB, HuC Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey.
HvB*:				
Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
HyE3*:				
Hudson	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, too clayey.
Vergennes	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
InB*:				
Insula	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Quetico	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
IoB*:				
Insula	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
IrB, IrC: Ira	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Ju: Junius	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
KgA, KgB: Kingsbury	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Kh*:				
Kingsbury	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Livingston	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
LaB*, LaC*:				
Lagross	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
Haights	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Lb: Lamson	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Lc, Ld: Livingston	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
LoA, LoB, LoC: Lowville	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
LoD: Lowville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Ma: Madalin	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MdA, MdB, MdC: Madrid	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
MdD: Madrid	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MnB, MnC: Manlius	Poor: area reclaim.	Improbable: small stones, excess fines.	Improbable: thin layer, excess fines.	Poor: small stones, area reclaim.
MoA, MoB, MpB: Massena	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
MtB: Millsite	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MuC*:				
Millsite	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
MuE*:				
Millsite	Poor: slope, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Rock outcrop.				
Mv: Minoa	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MwA, MwB: Muskellunge	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
MxC*:				
Muskellunge	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Millsite	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
NaC: Nassau	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
NbF*:				
Nassau	Poor: slope, thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, area reclaim, small stones.
Manlius	Poor: slope, area reclaim.	Improbable: small stones, excess fines.	Improbable: thin layer, excess fines.	Poor: small stones, slope, area reclaim.
NlA, NlB, NlC: Nellis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NlD: Nellis	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
NmE*:				
Nellis	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Madrid	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Nn: Newstead	Poor: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones.
NoA, NoB, NpB: Niagara	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Pa: Palms	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess humus.
PhA, PhB: Phelps	Fair: wetness.	Probable	Probable	Poor: small stones, area reclaim.
PkB*:				
Pinckney	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Ensley	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
Pm*, Pn*. Pits				
PoB, PoC: Plainfield	Good	Probable	Improbable: too sandy.	Poor: too sandy.
PpD*:				
Plainfield	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Windsor	Fair: slope.	Probable	Improbable: excess fines.	Poor: slope, too sandy.
Ps: Pootatuck	Fair: wetness.	Probable	Improbable: too sandy.	Fair: thin layer.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
QeB*:				
Quetico	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop.				
RhA, RhB Rhinebeck	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
RkC*:				
Rhinebeck	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Chatfield	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
Rn Rhinebeck Variant	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Ru Ruse	Poor: depth to rock, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, wetness.
Sa*:				
Saprists.				
Aquents.				
Sc Scarboro	Poor: wetness.	Probable	Improbable: too sandy.	Poor: too sandy, small stones, area reclaim.
SdA, SdB Scriba	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
Sh Shaker	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
SoB, SoC Sodus	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
SoD Sodus	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Su, Sv Sun	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Te: Teel	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones.
Ua, Ub. Udorthents				
Uc*: Udorthents.				
Udifluvents.				
Ur*. Urban land				
VeB: Vergennes	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
VeC: Vergennes	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Wa: Wareham	Poor: wetness.	Probable	Probable	Poor: wetness, too sandy, area reclaim.
We: Wayland	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Wh: Whately	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess humus.
Wk: Willette	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
WmB: Williamson	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
WnB: Wilpoint	Poor: area reclaim, low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey.
WnC: Wilpoint	Poor: area reclaim, low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too clayey, slope.
WoB, WoC: Windsor	Good	Probable	Improbable: excess fines.	Poor: too sandy.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
AgA, AgB: Agawam	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Favorable.
AhA: Allis	Moderate: depth to rock.	Severe: thin layer, wetness.	Severe: no water.	Percs slowly, depth to rock.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, droughty.
AhB: Allis	Moderate: depth to rock, slope.	Severe: thin layer, wetness.	Severe: no water.	Percs slowly, depth to rock, slope.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, droughty.
AlA, AlB: Alton	Severe: seepage.	Moderate: thin layer, seepage, piping.	Severe: no water.	Deep to water	Large stones	Large stones, droughty.
AlC, AlD, AlE: Alton	Severe: seepage, slope.	Moderate: thin layer, seepage, piping.	Severe: no water.	Deep to water	Slope, large stones.	Large stones, slope, droughty.
AmA: Amenia	Moderate: seepage.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Percs slowly.
AmB: Amenia	Moderate: seepage, slope.	Moderate: seepage, piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Percs slowly.
AnA: Angola	Moderate: depth to rock.	Severe: piping, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock	Wetness, erodes easily.
AnB: Angola	Moderate: depth to rock, slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock	Wetness, erodes easily.
ArB: Arkport	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Droughty.
ArC: Arkport	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, droughty.
Be*. Beaches						
BfF: Benson	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BgB*:						
Benson	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty.
Galoo	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
BhB Bice	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Droughty.
BhC, BhD, BhF Bice	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, droughty.
BkC Bice	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Large stones	Large stones, droughty.
BlB*:						
Bice	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Droughty.
Haights	Moderate: seepage, slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Slope	Wetness	Droughty.
BlC*:						
Bice	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, droughty.
Haights	Severe: slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Slope	Slope, wetness.	Slope, droughty.
BmB*:						
Bice	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Droughty.
Pinckney	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, rooting depth.	Rooting depth, droughty.
BmC*, BmD*:						
Bice	Severe: slope, seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope, droughty.
Pinckney	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, rooting depth, percs slowly.	Slope, droughty, percs slowly.
BnA, BnB Blasdell	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Favorable	Droughty.
BnC Blasdell	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Slope, droughty.
BoA Bombay	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Wetness	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BoB: Bombay	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Wetness	Favorable.
BpB: Bonaparte	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Droughty.
BpC: Bonaparte	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Bt: Boots	Severe: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Ca: Canandaigua	Slight	Severe: piping, wetness.	Severe: slow refill.	Frost action	Erodes easily, wetness.	Wetness, erodes easily.
Cb: Canandaigua	Slight	Severe: piping, ponding.	Severe: slow refill.	Ponding, frost action.	Erodes easily, ponding.	Wetness, erodes easily.
Cc: Carbondale	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Cd: Carlisle	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
ChB: Chatfield	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
CkC*, CkE*:						
Chatfield	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop.						
ClA: Chaumont	Moderate: depth to rock.	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, depth to rock.
ClB: Chaumont	Moderate: depth to rock, slope.	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, depth to rock.
CmA: Claverack	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Droughty, percs slowly.
CmB: Claverack	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly.	Droughty, percs slowly.
CnB: Collamer	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
CnC, CnC3: Collamer	Severe: slope.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
CoB: Collamer	Moderate: seepage, depth to rock, slope.	Severe: piping, wetness.	Severe: slow refill, cutbanks cave.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
Cp: Covington	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
DcB: Danley	Moderate: slope.	Moderate: piping.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily.
DcC, DcD: Danley	Severe: slope.	Moderate: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Erodes easily, slope.
DdA: Darien	Slight	Severe: wetness, piping.	Severe: no water.	Frost action	Erodes easily, wetness.	Wetness, erodes easily.
DdB: Darien	Moderate: slope.	Severe: wetness, piping.	Severe: no water.	Frost action, slope.	Erodes easily, wetness.	Wetness, erodes easily.
DdC: Darien	Severe: slope.	Severe: wetness, piping.	Severe: no water.	Frost action, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
DeB: Deerfield	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, too sandy.	Droughty.
Dp*. Dumps						
ElA: Elmridge	Slight	Moderate: piping, hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, percs slowly.
ElB: Elmridge	Moderate: slope.	Moderate: piping, hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Erodes easily, percs slowly.
Em: Ensley	Severe: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Wetness.
En: Ensley	Severe: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding	Wetness, droughty.
FaB: Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Fu*: Fluvaquents.						
Udifluvents.						
GaA---------------- Galen	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Favorable.
GaB---------------- Galen	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, too sandy.	Favorable.
GbB*, GcB*: Galoo------------	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
Rock outcrop.						
GlA---------------- Galway	Moderate: seepage, depth to rock.	Severe: piping.	Severe: no water.	Depth to rock	Depth to rock, wetness.	Depth to rock, droughty.
GlB---------------- Galway	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock, wetness.	Depth to rock, droughty.
GlC---------------- Galway	Severe: slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock, wetness.	Slope, depth to rock, droughty.
GmC---------------- Galway	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock, wetness.	Depth to rock, droughty.
Gr----------------- Granby	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, too sandy, soil blowing.	Wetness, droughty.
GtA, GtB---------- Groton	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Droughty.
GtC, GtD, GtE----- Groton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
GuB---------------- Groton Variant	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock, too sandy.	Large stones, droughty, depth to rock.
Gv----------------- Guffin	Moderate: depth to rock.	Severe: hard to pack, wetness.	Severe: slow refill, depth to rock.	Percs slowly, depth to rock, frost action.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, depth to rock.
Gw----------------- Gulf	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action---	Erodes easily, wetness.	Wetness, erodes easily, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
HaB*:						
Haights	Moderate: seepage, slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Slope	Wetness	Droughty.
Gulf	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action	Erodes easily, wetness.	Wetness, erodes easily, droughty.
Hb Halsey	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Wetness.
Hc Hamlin	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily	Erodes easily.
HeB Heuvelton	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
HeC Heuvelton	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
HmB*:						
Heuvelton	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
Millsite	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Slope, depth to rock, droughty.	Depth to rock	Depth to rock, droughty.
Rock outcrop.						
HnB Hinckley	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
HoB*:						
Hinckley	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
Hoosic	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy	Droughty.
HoE*:						
Hinckley	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, droughty, slope.
Hoosic	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
HpB*:						
Hollis	Severe: depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
HpB*:						
Galoo	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
HrB*:						
Hollis	Severe: depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop.						
HuB Hudson	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Percs slowly, erodes easily.
HuC Hudson	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, percs slowly, erodes easily.
HvB*:						
Hudson	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Percs slowly, erodes easily.
Chatfield	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop.						
HyE3*:						
Hudson	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, percs slowly, erodes easily.
Vergennes	Severe: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
InB*:						
Insula	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty.
Quetico	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
IoB*:						
Insula	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty.
Rock outcrop.						
IrB Ira	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, rooting depth.	Rooting depth, percs slowly.
IrC Ira	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, rooting depth.	Slope, rooting depth, percs slowly.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Ju: Junius	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Wetness, droughty.
KgA: Kingsbury	Slight	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
KgB: Kingsbury	Moderate: slope.	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Kh*:						
Kingsbury	Slight	Severe: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Livingston	Slight	Severe: wetness, hard to pack.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
LaB*:						
Lagross	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones	Droughty, large stones.
Haights	Moderate: seepage, slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Slope	Wetness	Droughty.
LaC*:						
Lagross	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, droughty, large stones.
Haights	Severe: slope.	Moderate: wetness.	Moderate: deep to water, slow refill.	Slope	Slope, wetness.	Slope, droughty.
Lb: Lamson	Severe: seepage.	Severe: piping, ponding.	Severe: cutbanks cave.	Ponding, frost action.	Ponding, soil blowing.	Wetness.
Lc: Livingston	Slight	Severe: wetness, hard to pack.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ld: Livingston	Slight	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
LoA: Lowville	Moderate: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily.
LoB: Lowville	Moderate: seepage, slope.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Erodes easily, percs slowly.	Erodes easily.
LoC, LoD: Lowville	Severe: slope.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, erodes easily, percs slowly.	Slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Ma: Madalin	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, wetness, percs slowly.	Wetness, percs slowly, erodes easily.
MdA: Madrid	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable.
MdB: Madrid	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable.
MdC, MdD: Madrid	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
MnB: Manlius	Moderate: seepage, depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Droughty, large stones, depth to rock.
MnC: Manlius	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, droughty, large stones.
MoA: Massena	Slight	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness.
MoB, MpB: Massena	Moderate: slope.	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness.
MtB: Millsite	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Slope, depth to rock, droughty.	Depth to rock	Depth to rock, droughty.
MuC*, MuE*:						
Millsite	Severe: slope, seepage.	Severe: seepage, piping.	Severe: no water.	Slope, depth to rock, droughty.	Slope, depth to rock.	Slope, depth to rock, droughty.
Rock outcrop.						
Mv: Minoa	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness	Wetness.
MwA: Muskellunge	Slight	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
MwB: Muskellunge	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Slope, percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
MxC*:						
Muskellunge	Severe: slope.	Severe: piping, wetness.	Severe: no water.	Slope, percs slowly, frost action.	Slope, erodes easily, wetness.	Slope, wetness, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
MxC*:						
Millsite	Severe: slope, seepage.	Severe: seepage, piping.	Severe: no water.	Slope, depth to rock, droughty.	Slope, depth to rock.	Slope, depth to rock, droughty.
Rock outcrop.						
NaC: Nassau	Severe: depth to rock, slope.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, droughty.
NbF*:						
Nassau	Severe: depth to rock, slope.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, droughty.
Manlius	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, droughty, large stones.
NlA: Nellis	Moderate: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Rooting depth, droughty.
NlB: Nellis	Moderate: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Favorable	Rooting depth, droughty.
NlC, NlD: Nellis	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, rooting depth, droughty.
NmE*:						
Nellis	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope	Slope, rooting depth, droughty.
Madrid	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Nn: Newstead	Moderate: seepage, depth to rock.	Severe: seepage, piping, wetness.	Severe: depth to rock.	Depth to rock, large stones, frost action.	Depth to rock, wetness.	Wetness, depth to rock.
NoA: Niagara	Slight	Severe: piping, wetness.	Severe: slow refill.	Frost action	Erodes easily, wetness.	Wetness, erodes easily.
NoB, NpB: Niagara	Moderate: slope.	Severe: piping, wetness.	Severe: slow refill.	Frost action, slope.	Erodes easily, wetness.	Wetness, erodes easily.
Pa: Palms	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
PhA: Phelps	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
PhB----------------- Phelps	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, too sandy.	Favorable.
PkB*:						
Pinckney----------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, rooting depth.	Rooting depth, droughty.
Ensley------------	Severe: seepage.	Severe: piping, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding---------	Wetness.
Pm*, Pn*. Pits						
PoB----------------- Plainfield	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
PoC----------------- Plainfield	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Droughty, slope.
PpD*:						
Plainfield--------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy, soil blowing.	Droughty, slope.
Windsor-----------	Severe: slope, seepage.	Severe: seepage, piping.	Severe: no water.	Slope, cutbanks cave.	Slope, too sandy.	Slope, droughty.
Ps------------------ Pootatuck	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, cutbanks cave.	Wetness, too sandy.	Favorable.
QeB*:						
Quetico-----------	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Depth to rock	Depth to rock.
Rock outcrop.						
RhA----------------- Rhinebeck	Slight----------	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
RhB----------------- Rhinebeck	Moderate: slope.	Severe: wetness.	Severe: no water.	Slope, percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
RkC*:						
Rhinebeck---------	Severe: slope.	Severe: wetness.	Severe: no water.	Slope, percs slowly, frost action.	Slope, erodes easily, wetness.	Slope, wetness, erodes easily.
Chatfield---------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop.						

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Rn---------------- Rhinebeck Variant	Slight---------	Severe: wetness.	Severe: no water.	Percs slowly, flooding, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ru---------------- Ruse	Severe: depth to rock.	Severe: piping, ponding.	Severe: depth to rock.	Ponding, depth to rock, frost action.	Depth to rock, ponding.	Wetness, depth to rock.
Sa*: Saprists.						
Aquents.						
Sc---------------- Scarboro	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, frost action, cutbanks cave.	Ponding, too sandy.	Wetness, droughty.
SdA--------------- Scriba	Slight---------	Severe: seepage, piping, wetness.	Severe: no water.	Percs slowly---	Wetness, rooting depth.	Wetness, droughty.
SdB--------------- Scriba	Moderate: slope.	Severe: seepage, piping, wetness.	Severe: no water.	Percs slowly, slope.	Wetness, rooting depth.	Wetness, droughty.
Sh---------------- Shaker	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
SoB--------------- Sodus	Moderate: slope.	Moderate: seepage.	Severe: no water.	Percs slowly, slope.	Rooting depth, percs slowly.	Rooting depth, percs slowly.
SoC, SoD---------- Sodus	Severe: slope.	Moderate: seepage.	Severe: no water.	Percs slowly, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
Su, Sv------------ Sun	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness, rooting depth, percs slowly.
Te---------------- Teel	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, wetness.	Erodes easily.
Ua, Ub. Udorthents						
Uc*: Udorthents.						
Udifluvents.						
Ur*. Urban land						
VeB--------------- Vergennes	Moderate: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Erodes easily, wetness.	Wetness, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
VeC---------------- Vergennes	Severe: slope.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
Wa---------------- Wareham	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Wetness, droughty.
We---------------- Wayland	Slight---------	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Wh---------------- Whately	Severe: seepage.	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Wetness, erodes easily, rooting depth.
Wk---------------- Willette	Severe: seepage.	Severe: ponding.	Severe: no water.	Ponding, percs slowly, subsides.	Ponding, soil blowing, percs slowly.	Wetness, percs slowly.
WmB--------------- Williamson	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
WnB--------------- Wilpoint	Moderate: depth to rock, slope.	Severe: hard to pack.	Severe: no water.	Wetness, percs slowly.	Slope, depth to rock, erodes easily.	Erodes easily, depth to rock.
WnC--------------- Wilpoint	Severe: slope.	Severe: hard to pack.	Severe: no water.	Wetness, percs slowly.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
WoB--------------- Windsor	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Slope, cutbanks cave.	Too sandy-------	Droughty.
WoC--------------- Windsor	Severe: slope, seepage.	Severe: seepage, piping.	Severe: no water.	Slope, cutbanks cave.	Slope, too sandy.	Slope, droughty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
AgA, AgB--------- Agawam	0-10	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	65-95	40-65	<25	NP-3
	10-16	Fine sandy loam, very fine sandy loam, loam.	SM, ML	A-4	0	95-100	85-100	65-95	40-65	<25	NP-3
	16-30	Fine sandy loam	SM, SP-SM	A-2, A-3, A-4	0	90-100	85-100	60-95	5-45	<20	NP-3
	30-60	Fine sand, loamy fine sand, loamy sand.	SM, SP-SM	A-2	0	90-100	85-100	40-90	5-35	---	NP
AhA, AhB--------- Allis	0-8	Silt loam--------	ML, CL	A-6, A-7	0	80-100	75-100	70-100	55-90	35-45	10-20
	8-28	Silty clay loam, silty clay, shaly clay.	ML, CL, GC, GM	A-6, A-7	5-10	55-95	50-95	45-95	40-95	35-45	10-20
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
AlA, AlB, AlC, AlD, AlE-------- Alton	0-6	Gravelly loam----	SM, ML, GM, GP-GM	A-2, A-4, A-1	0-5	65-75	60-70	30-65	10-60	<10	NP-3
	6-33	Gravelly loam, very gravelly sandy loam, gravelly coarse sandy loam.	GM, SM	A-2, A-4, A-1	5-25	45-70	35-55	20-50	20-40	<10	NP-3
	33-65	Very gravelly sand, very gravelly loamy sand, very gravelly sandy loam.	GP, GM, SM, SP	A-1	10-25	45-60	40-50	20-40	2-35	---	NP
AmA, AmB--------- Amenia	0-9	Loam-------------	ML, CL-ML, SM, SC	A-4	0-5	80-100	75-95	60-95	35-85	<30	NP-10
	9-19	Silt loam, loam, gravelly fine sandy loam.	ML, GM, GC, CL	A-2, A-4	0-5	55-95	50-90	40-85	25-70	<30	NP-10
	19-60	Gravelly fine sandy loam, gravelly loam.	GM, GC, SM, SC	A-2, A-4	0-15	55-80	50-75	40-65	25-50	<30	NP-10
AnA, AnB--------- Angola	0-8	Silt loam--------	ML, CL	A-4, A-5, A-6, A-7	0	100	75-100	65-100	55-95	25-45	3-20
	8-20	Silty clay loam, clay loam, shaly loam.	GM, GC, ML, CL	A-4, A-6	0-5	60-100	55-95	45-95	35-90	15-35	3-20
	20-24	Shaly clay loam, very shaly loam, channery silty clay loam.	GM, GC, ML, CL	A-1, A-2, A-4, A-6	0-5	40-80	35-75	30-75	20-70	15-35	3-20
	24	Weathered bedrock	---	---	---	---	---	---	---	---	---

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
ArB, ArC---------- Arkport	0-7	Fine sandy loam	SM, ML	A-4	0	95-100	95-100	65-95	40-65	<15	NP-4
	7-56	Very fine sandy loam, loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	95-100	95-100	70-95	30-65	<15	NP-4
	56-80	Loamy fine sand, fine sand, loamy very fine sand.	SM	A-2, A-4	0	95-100	95-100	60-95	15-50	---	NP
Be*. Beaches											
BfF-------------- Benson	0-3	Channery silt loam.	SM, GM	A-2, A-4	5-30	40-75	35-65	30-55	25-50	20-40	NP-10
	3-12	Very cherty loam, channery loam, very channery silt loam.	GM	A-2, A-1	5-35	40-60	30-50	25-40	15-35	20-40	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BgB*: Benson----------	0-3	Channery silt loam.	SM, GM	A-2, A-4	5-30	40-75	35-65	30-55	25-50	20-40	NP-10
	3-12	Very cherty loam, channery loam, very channery silt loam.	GM	A-2, A-1	5-35	40-60	30-50	25-40	15-35	20-40	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Galoo-----------	0-4	Silt loam--------	CL, ML, SM, CL-ML	A-4, A-6, A-2	0	80-100	75-95	50-95	30-85	15-30	3-15
	4-7	Channery silt loam, loam, fine sandy loam.	CL, ML, SM, CL-ML	A-4, A-6, A-2	0	75-100	70-95	50-95	30-85	15-30	3-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
BhB, BhC, BhD, BhF------------- Bice	0-6	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-2, A-4	0-10	85-95	75-90	50-85	25-80	<25	NP-5
	6-18	Gravelly coarse sandy loam, gravelly sandy loam, silt loam.	SM, ML, GM	A-2, A-4, A-1	5-15	65-90	60-90	40-85	20-80	<25	NP-3
	18-26	Sandy loam, gravelly sandy loam, gravelly loam.	SM, ML, GM	A-2, A-4, A-1	5-15	60-90	60-90	40-80	20-65	<25	NP-3
	26-70	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM, GM	A-2, A-4, A-1	5-15	60-90	60-85	40-75	20-50	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
BkC-------------- Bice	0-6	Very stony fine sandy loam.	SM, ML, CL-ML, SM-SC	A-2, A-4	10-25	75-95	70-90	60-85	30-70	<25	NP-5
	6-26	Sandy loam, gravelly sandy loam, gravelly loam.	SM, ML, GM	A-2, A-4	5-15	65-90	60-90	50-80	20-65	<25	NP-3
	26-70	Sandy loam, gravelly sandy loam, gravelly fine sandy loam.	SM, GM	A-2, A-4, A-1	5-15	60-90	60-85	40-75	20-50	---	NP
BlB*, BlC*:											
Bice------------	0-6	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-2, A-4	0-10	85-95	75-90	50-85	25-80	<25	NP-5
	6-18	Gravelly coarse sandy loam, gravelly sandy loam, silt loam.	SM, ML, GM	A-2, A-4, A-1	5-15	65-90	60-90	40-85	20-80	<25	NP-3
	18-26	Sandy loam, gravelly sandy loam, gravelly loam.	SM, ML, GM	A-2, A-4, A-1	5-15	60-90	60-90	40-80	20-65	<25	NP-3
	26-70	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM, GM	A-2, A-4, A-1	5-15	60-90	60-85	40-75	20-50	---	NP
Haights---------	0-6	Silt loam--------	ML, SM	A-7, A-6	0	80-100	75-100	65-95	45-85	35-45	10-15
	6-27	Shaly silt loam, gravelly fine sandy loam, silt loam.	ML, SM, GM, GM	A-4, A-2	0-10	55-100	50-100	40-90	25-75	25-35	5-10
	27-34	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, GM-GC, CL	A-4, A-2, A-1	0-10	30-70	25-70	20-70	10-65	25-35	5-10
	34-60	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, CL, GC, GM-GC	A-4, A-2, A-1	5-15	30-70	25-70	20-70	10-65	15-25	5-10
BmB*, BmC*, BmD*:											
Bice------------	0-6	Fine sandy loam	SM, ML, CL-ML, SM-SC	A-2, A-4	0-10	85-95	75-90	50-85	25-80	<25	NP-5
	6-18	Gravelly coarse sandy loam, gravelly sandy loam, silt loam.	SM, ML, GM	A-2, A-4, A-1	5-15	65-90	60-90	40-85	20-80	<25	NP-3
	18-26	Sandy loam, gravelly sandy loam, gravelly loam.	SM, ML, GM	A-2, A-4, A-1	5-15	60-90	60-90	40-80	20-65	<25	NP-3
	26-70	Gravelly sandy loam, gravelly fine sandy loam, loam.	SM, GM	A-2, A-4, A-1	5-15	60-90	60-85	40-75	20-50	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BmB*, BmC*, BmD*:											
Pinckney--------	0-7	Silt loam--------	ML, SM	A-4	0-5	80-100	75-100	65-100	40-90	20-30	1-6
	7-22	Silt loam, loam, channery very fine sandy loam.	ML, SM	A-4	0-10	75-100	70-100	60-100	35-90	20-30	1-6
	22-64	Loam, channery fine sandy loam.	ML, SM, GM, CL-ML	A-4, A-2, A-1	5-10	55-90	50-85	35-80	20-65	15-25	1-6
	64-72	Loam, channery fine sandy loam.	ML, SM, GM, CL-ML	A-4, A-2, A-1	5-15	50-90	45-85	30-80	20-65	15-25	1-6
BnA, BnB, BnC---- Blasdell	0-8	Shaly silt loam	GM, SM, ML	A-5, A-2	0-15	55-80	50-75	40-75	25-70	40-50	5-10
	8-36	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM, GC	A-1, A-2, A-4	0-15	25-60	20-55	15-55	10-50	25-35	5-10
	36-60	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM, GP-GM	A-1, A-2	0-15	15-45	10-40	10-40	5-35	25-35	5-10
BoA, BoB--------- Bombay	0-8	Loam-------------	ML, SM	A-2, A-4	0	80-100	75-85	50-85	30-75	30-40	3-11
	8-39	Gravelly loam, gravelly fine sandy loam, silt loam.	SM, CL, SM-SC, CL-ML	A-2, A-4	0-5	60-95	55-85	45-85	25-75	15-30	1-10
	39-65	Gravelly fine sandy loam, gravelly loam.	SM, SM-SC, GM, CL-ML	A-2, A-4, A-1	0-5	60-85	55-80	40-70	20-60	<20	NP-5
BpB, BpC--------- Bonaparte	0-5	Gravelly loamy fine sand.	SM, GM, SW-SM, GW-GM	A-2, A-1	0-5	55-80	50-75	25-65	10-30	---	NP
	5-26	Gravelly loamy fine sand, gravelly loamy sand, very gravelly loamy sand.	SM, GM, GP-GM, SP-SM	A-2, A-1	5-10	30-55	25-50	20-35	5-25	---	NP
	26-60	Stratified sand and gravel.	SP-SM, SP, GP, GP-GM	A-1	5-15	20-50	15-45	15-35	2-10	---	NP
Bt--------------- Boots	0-11	Muck-------------	PT	A-8	0	---	---	---	---	---	---
	11-99	Mucky peat-------	PT	A-8	0	---	---	---	---	---	---
Ca--------------- Canandaigua	0-10	Silt loam--------	ML, MH	A-4, A-5, A-7	0	95-100	95-100	90-100	85-100	35-55	5-15
	10-58	Silt loam, very fine sandy loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-95	20-40	5-15
	58-72	Silt loam, very fine sandy loam.	ML, CL, CL-ML	A-4	0	95-100	95-100	90-100	70-95	20-30	3-10
Cb--------------- Canandaigua	0-10	Mucky silt loam	ML, OL, MH, OH	A-4, A-5, A-7	0	95-100	95-100	90-100	85-100	35-55	5-15
	10-58	Silt loam, very fine sandy loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-95	20-40	5-15
	58-72	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4	0	95-100	95-100	90-100	70-95	20-30	3-10
Cc--------------- Carbondale	0-36	Muck-------------	PT	A-8	0	---	---	---	---	---	---
	36-92	Mucky peat-------	PT	A-8	0	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Cd-----------Carlisle	0-63	Muck-----------	PT	A-8	---	---	---	---	---	---	---
ChB-----------Chatfield	0-4	Loam-----------	SM, ML, SM-SC, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	4-30	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CkC*, CkE*:											
Chatfield-------	0-4	Loam-----------	SM, ML, SM-SC, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	4-30	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
ClA, ClB---------Chaumont	0-5	Silty clay-------	MH, CH	A-7	0	100	95-100	90-100	70-95	55-80	15-50
	5-11	Clay, silty clay, silty clay loam.	MH, CH	A-7	0	100	95-100	90-100	70-95	50-80	20-45
	11-22	Clay------------	MH, CH	A-7	0	100	95-100	90-100	70-95	50-80	20-45
	22-27	Silty clay, clay	ML, CL, MH, CH	A-7	0	100	95-100	90-100	70-95	40-60	15-25
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CmA, CmB---------Claverack	0-8	Loamy fine sand	SM, SW, SW-SM, SP	A-2, A-4, A-1, A-3	0	100	95-100	45-85	4-40	---	NP
	8-21	Loamy fine sand, fine sand, sand.	SM, SW, SW-SM, SP	A-2, A-4, A-1, A-3	0	100	95-100	45-85	4-40	---	NP
	21-60	Silty clay, clay, silty clay loam.	CL, CL-ML	A-7, A-4, A-6	0	100	95-100	90-100	75-95	20-50	5-30
CnB, CnC, CnC3---Collamer	0-8	Silt loam--------	ML, SM, CL-ML, SM-SC	A-4	0	95-100	95-100	65-100	40-90	25-35	5-10
	8-18	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL, CL-ML, SM-SC	A-4	0	95-100	95-100	65-100	40-90	20-30	3-10
	18-32	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-4, A-6	0	95-100	95-100	90-100	75-95	20-35	5-15
	32-60	Silt loam, very fine sand, silty clay loam.	ML, SM, CL-ML, CL	A-4, A-6	0	95-100	95-100	70-100	40-90	20-35	3-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CoB-------------- Collamer	0-8	Silt loam--------	ML, SM, CL-ML, SM-CL	A-4	0	95-100	95-100	65-100	40-90	25-35	5-10
	8-18	Silt loam, very fine sandy loam, fine sandy loam.	ML, CL, CL-ML, SM-CL	A-4	0	95-100	95-100	65-100	40-90	20-30	3-10
	18-32	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-4, A-6	0	95-100	95-100	90-100	75-95	20-35	5-15
	32-48	Silt loam, very fine sand, silty clay loam.	ML, SM, CL-ML, CL	A-4, A-6	0	95-100	95-100	70-100	40-90	20-35	3-15
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cp--------------- Covington	0-6	Silty clay-------	CH, MH	A-7	0	100	95-100	95-100	90-100	40-80	10-40
	6-32	Clay-------------	CH, MH	A-7	0	100	95-100	95-100	95-100	50-80	25-40
	32-64	Clay, silty clay	CH, MH	A-7	0	100	95-100	95-100	95-100	50-80	25-40
DcB, DcC, DcD---- Danley	0-14	Silt loam--------	ML, SM	A-4, A-6, A-7	0	80-100	75-95	65-90	45-85	35-45	5-15
	14-26	Silty clay loam, clay loam, shaly clay loam.	CL, SC, GC, CL-ML	A-4, A-6	0-5	55-100	50-95	50-90	40-85	20-35	5-15
	26-46	Shaly silty clay loam, clay loam, shaly clay loam.	CL, GC, SC, CL-ML	A-4, A-6	0-5	55-100	50-95	50-90	40-85	20-35	5-15
	46-60	Shaly silty clay loam, loam, very shaly clay loam.	CL, GC, CL-ML, SC	A-2, A-4, A-6, A-1	5-15	30-90	25-85	20-85	15-80	20-35	5-15
DdA, DdB, DdC---- Darien	0-14	Silt loam--------	ML, SM	A-4, A-7	0	80-95	75-90	65-90	45-85	35-45	5-15
	14-26	Clay loam, shaly silt loam, silty clay loam.	CL, CL-ML, SC, GM-GC	A-4, A-6	0-5	60-95	55-90	50-90	40-85	25-35	5-15
	26-43	Clay loam, shaly silt loam, silty clay loam.	CL, CL-ML, SC, GM-GC	A-4, A-6	0-5	60-95	55-90	50-90	40-85	25-35	5-15
	43-60	Shaly clay loam, very shaly silt loam, silty clay loam.	CL, CL-ML, SC, GM-GC	A-4, A-2, A-6	5-15	40-95	35-90	30-90	25-85	25-35	5-15
DeB-------------- Deerfield	0-7	Loamy fine sand	SP-SM, SM	A-1, A-2, A-3, A-4	0	95-100	80-100	40-75	5-40	---	NP
	7-28	Loamy fine sand, sand, coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	80-100	40-75	5-30	---	NP
	28-60	Sand, fine sand, coarse sand.	SP, SM	A-1, A-2, A-3	0	95-100	65-100	30-75	3-30	---	NP
Dp*. Dumps											
ElA, ElB--------- Elmridge	0-10	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	10-23	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	23-60	Silty clay loam, silty clay, clay.	CL, CL-ML	A-6, A-7	0	100	100	90-100	75-95	25-50	5-25

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Em----------------- Ensley	0-8	Loam-------------	ML, CL-ML	A-4	0-10	90-100	85-100	75-90	50-65	<25	NP-6
	8-26	Gravelly sandy loam, sandy clay loam, fine sandy loam.	SC	A-6, A-4, A-2	0-10	70-100	65-100	55-90	25-50	20-30	8-16
	26-60	Sandy loam, gravelly fine sandy loam.	SM-SC, SM	A-2, A-4	0-10	70-95	65-95	50-75	20-40	<20	NP-7
En----------------- Ensley	0-8	Very stony silt loam.	SM-SC, SM, ML, CL-ML	A-2, A-4	0-10	85-100	75-85	45-85	25-75	<25	NP-6
	8-26	Sandy loam, gravelly sandy loam, sandy clay loam.	CL, SC	A-2, A-4, A-6	0-10	70-100	65-100	55-90	30-70	20-30	8-16
	26-60	Sandy loam, gravelly fine sandy loam.	SM-SC, SM	A-2	0-10	70-95	65-95	50-65	20-35	<20	NP-7
FaB---------------- Farmington	0-8	Loam-------------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	8-19	Silt loam, loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Fu*: Fluvaquents.											
Udifluvents.											
GaA, GaB---------- Galen	0-8	Fine sandy loam	SM, ML	A-4	0	100	95-100	70-95	40-60	<15	NP-4
	8-26	Fine sandy loam, very fine sandy loam, fine sand.	SM, ML	A-2, A-4	0	100	95-100	70-95	25-65	<15	NP-4
	26-40	Loamy fine sand, loamy very fine sand, fine sand.	SM, ML	A-2, A-4	0	100	95-100	70-95	25-60	<15	NP-4
	40-60	Stratified fine sand to very fine sand.	SM	A-2, A-4	0	100	95-100	60-90	20-50	---	NP
GbB*: Galoo------------	0-4	Silt loam--------	CL, ML, SM, CL-ML	A-4, A-6, A-2	0	80-100	75-95	50-95	30-85	15-30	3-15
	4-7	Channery silt loam, loam, fine sandy loam.	CL, ML, SM, CL-ML	A-4, A-6, A-2	0	75-100	70-95	50-95	30-85	15-30	3-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
GcB*:											
Galoo-----------	0-4	Silt loam--------	CL, ML, SM, CL-ML	A-4, A-2-4, A-6	0	80-100	75-95	50-95	30-85	15-30	3-15
	4-7	Channery silt loam, loam, fine sandy loam.	CL, ML, SM, CL-ML	A-4, A-2-4, A-6	0	75-100	70-95	50-95	30-85	15-30	3-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
GlA, GlB, GlC---- Galway	0-9	Silt loam--------	ML, SM	A-6, A-7	0-5	80-100	75-100	65-100	45-90	35-45	10-15
	9-23	Loam, silt loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-5	60-95	50-95	35-90	20-75	20-40	3-15
	23-26	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-5	20-90	15-85	10-85	5-75	<20	NP-3
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
GmC-------------- Galway	0-9	Very stony silt loam.	ML, GM, SM	A-2, A-6, A-7	5-15	55-80	50-75	45-75	30-65	35-45	10-15
	9-23	Loam, silt loam, gravelly fine sandy loam.	ML, GM, GM-GC, CL-ML	A-2, A-4, A-1, A-6	0-5	60-95	50-95	35-90	20-75	20-40	3-15
	23-26	Gravelly loam, very gravelly sandy loam, silt loam.	GM, GW-GM, ML, SP-SM	A-2, A-4, A-1, A-3	0-5	20-90	15-85	10-85	5-75	<20	NP-3
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gr--------------- Granby	0-10	Loamy fine sand	SM	A-2	0	100	100	50-75	15-30	---	NP
	10-38	Sand, fine sand, loamy sand.	SP, SP-SM, SM	A-3, A-2	0	100	95-100	50-75	0-20	---	NP
	38-60	Sand, fine sand	SP, SP-SM	A-3, A-2	0	100	95-100	50-70	0-5	---	NP
GtA, GtB, GtC, GtD, GtE-------- Groton	0-8	Gravelly loam----	SM, GM	A-2, A-4	0-10	55-85	45-70	30-60	15-50	---	NP
	8-19	Gravelly sandy loam, gravelly fine sandy loam, very gravelly sandy loam.	GM, GP-GM, SP-SM	A-1, A-2	0-20	55-85	30-70	20-50	10-30	---	NP
	19-39	Very gravelly sandy loam, very gravelly sand, gravelly loamy sand.	GM, GP-GM, SM, SP-SM	A-1	0-20	40-80	30-70	15-45	5-25	---	NP
	39-90	Stratified gravelly loamy fine sand to extremely gravelly coarse sand.	SP, GP, GP-GM	A-1	0-25	35-70	20-55	10-35	0-15	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
GuB-------------- Groton Variant	0-7	Gravelly loam----	GM, SM, ML	A-1, A-2, A-4	0-10	50-80	45-75	25-75	15-70	<20	NP-3
	7-13	Very gravelly sandy loam, very gravelly loam, gravelly fine sandy loam.	GM, SM	A-1, A-2, A-4	0-20	50-80	45-75	25-70	15-50	<20	NP-3
	13-39	Very gravelly sand, very gravelly loamy sand.	GP, SP, GP-GM, SP-SM	A-1	0-40	20-60	15-55	10-40	0-15	---	NP
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gv--------------- Guffin	0-7	Clay-------------	MH, CH	A-7	0	100	95-100	90-100	80-100	55-80	15-50
	7-19	Clay-------------	MH, CH	A-7	0	100	95-100	90-100	90-100	50-80	20-45
	19-22	Clay-------------	MH, CH	A-7	0	95-100	95-100	90-100	90-100	50-80	20-45
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gw--------------- Gulf	0-7	Silt loam--------	CL, CL-ML	A-4, A-7, A-6	0-5	95-100	90-100	75-95	55-85	25-50	5-30
	7-26	Silt loam, silty clay loam, gravelly loam.	GM-GC, CL, CL-ML, SC	A-4, A-6	0-5	65-95	60-95	50-90	40-80	25-40	5-20
	26-60	Gravelly loam----	GM, GM-GC, CL-ML, ML	A-1, A-2, A-4	0-5	50-80	45-75	25-70	20-60	5-15	NP-5
HaB*:											
Haights---------	0-6	Silt loam--------	ML, SM	A-7, A-6	0	80-100	75-100	65-95	45-85	35-45	10-15
	6-27	Shaly silt loam, gravelly fine sandy loam, silt loam.	ML, SM, GM, GM	A-4, A-2	0-10	55-100	50-100	40-90	25-75	25-35	5-10
	27-34	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, GM-GC,CL	A-4, A-2, A-1	0-10	30-70	25-70	20-70	10-65	25-35	5-10
	34-60	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, CL, GC, GM-GC	A-4, A-2, A-1	5-15	30-70	25-70	20-70	10-65	15-25	5-10
Gulf-----------	0-7	Silt loam--------	CL, CL-ML	A-4, A-7, A-6	0-5	95-100	90-100	75-95	55-85	25-50	5-30
	7-26	Silt loam, silty clay loam, gravelly loam.	GM-GC, CL, CL-ML, SC	A-4, A-6	0-5	65-95	60-95	50-90	40-80	25-40	5-20
	26-60	Gravelly loam----	GM, GM-GC, CL-ML, ML	A-1, A-2, A-4	0-5	50-80	45-75	25-70	20-60	5-15	NP-5
Hb--------------- Halsey	0-8	Mucky loam-------	ML, CL, SM	A-2, A-4	0-2	80-100	75-100	35-90	25-90	20-30	3-10
	8-30	Loam, silt loam, gravelly sandy loam.	SM, GC, ML, CL	A-2, A-4	0-2	65-100	50-100	35-90	30-85	20-30	3-10
	30-60	Stratified sandy loam to very gravelly sand.	SP, GP, GM, SM	A-1, A-2, A-3	5-10	30-90	25-85	20-70	0-35	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Hc---------------- Hamlin	0-10	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	60-90	15-35	2-15
	10-32	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	60-90	15-35	2-15
	32-54	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	60-90	15-35	2-15
	54-65	Silt loam, very fine sandy loam, gravelly fine sandy loam.	ML, SM, CL, SM-SC	A-4	0	75-100	65-100	50-100	40-90	<25	NP-10
HeB, HeC--------- Heuvelton	0-12	Silt loam--------	CL-ML, CL	A-4, A-6	0-5	85-100	80-100	75-100	70-95	25-40	5-20
	12-35	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	85-100	80-100	75-100	30-55	10-30
	35-60	Clay, silty clay, silty clay loam.	CL	A-7, A-6	0	95-100	85-100	80-100	75-100	30-55	10-30
HmB*:											
Heuvelton-------	0-12	Silt loam--------	CL-ML, CL	A-4, A-6	0-5	85-100	80-100	75-100	70-95	25-40	5-20
	12-35	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	85-100	80-100	75-100	30-55	10-30
	35-60	Clay, silty clay, silty clay loam.	CL	A-7, A-6	0	95-100	85-100	80-100	75-100	30-55	10-30
Millsite--------	0-6	Loam-------------	SM, ML, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	6-28	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	10-20	1-6
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
HnB-------------- Hinckley	0-6	Gravelly sandy loam.	SM, SP-SM	A-1, A-2, A-3, A-4	0-10	60-95	40-75	20-70	2-40	<20	NP
	6-20	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand.	SM, GM, GP-GM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	<20	NP
	20-60	Stratified very gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	5-30	20-65	20-50	10-40	0-20	<10	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
HoB*, HoE*:											
Hinckley--------	0-6	Cobbly sandy loam.	SM, SP-SM	A-1, A-2, A-3, A-4	0-10	60-95	40-75	20-70	2-40	<20	NP
	6-20	Gravelly loamy sand, loamy fine sand, very gravelly loamy coarse sand.	SM, GM, GP-GM, SP-SM	A-1, A-2, A-3	0-20	50-95	30-85	15-70	2-30	<20	NP
	20-60	Stratified very gravelly loamy fine sand to cobbly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	5-30	20-65	20-50	10-40	0-20	<10	NP
Hoosic----------	0-8	Cobbly sandy loam.	GM, SM, ML	A-1, A-2, A-4	5-10	55-80	50-70	30-70	15-60	30-45	2-10
	8-16	Gravelly sandy loam, very gravelly sandy loam, gravelly loam.	GM, SM, GP-GM, SP-SM	A-1, A-2, A-4	5-10	40-75	35-65	20-60	10-45	20-30	2-8
	16-60	Very gravelly sand, very gravelly loamy sand.	GM, GP, SP, SM	A-1	10-15	35-65	30-50	15-40	2-20	---	NP
HpB*:											
Hollis----------	0-4	Fine sandy loam	SM, ML	A-2, A-4	0-5	85-100	75-95	50-85	25-65	<25	NP-5
	4-16	Gravelly fine sandy loam, sandy loam, loam.	SM, ML, GM	A-2, A-4	0-15	65-100	60-95	40-80	20-65	<25	NP-5
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Galoo-----------	0-4	Silt loam--------	CL, ML, SM, CL-ML	A-4, A-2-4, A-6	0	80-100	75-95	50-95	30-85	15-30	3-15
	4-7	Channery silt loam, loam, fine sandy loam.	CL, ML, SM, CL-ML	A-4, A-2-4, A-6	0	75-100	70-95	50-95	30-85	15-30	3-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
HrB*:											
Hollis----------	0-4	Fine sandy loam	SM, ML	A-2, A-4	0-5	85-100	75-95	50-85	25-65	<25	NP-5
	4-16	Gravelly fine sandy loam, sandy loam, loam.	SM, ML, GM	A-2, A-4	0-15	65-100	60-95	40-80	20-65	<25	NP-5
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
HuB, HuC--------- Hudson	0-12	Silt loam--------	ML, CL-ML, OL, CL	A-4, A-6, A-7	0	95-100	95-100	85-100	65-95	25-48	5-19
	12-16	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	16-59	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	59-70	Silty clay, silt loam, clay.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	60-100	35-65	15-35
HvB*: Hudson----------	0-12	Silt loam--------	ML, CL-ML, OL, CL	A-4, A-6, A-7	0	95-100	95-100	85-100	65-95	25-48	5-19
	12-16	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	16-59	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	59-70	Silty clay, silt loam, clay.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	60-100	35-65	15-35
Chatfield-------	0-4	Gravelly loam----	SM, GM, GM-GC, SM-SC	A-4, A-2, A-1	0-5	55-80	50-75	30-65	15-50	10-20	1-6
	4-30	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
HyE3*: Hudson----------	0-12	Silt loam--------	ML, CL-ML, OL, CL	A-4, A-6, A-7	0	95-100	95-100	85-100	65-95	25-48	5-19
	12-16	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	16-59	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	59-70	Silty clay, silt loam, clay.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	60-100	35-65	15-35
Vergennes-------	0-8	Silty clay loam	MH, CH, CL, ML	A-7	0	100	100	90-100	85-100	40-80	20-40
	8-29	Clay-------------	MH, CH	A-7	0	100	100	95-100	95-100	55-80	20-45
	29-72	Clay-------------	MH, CH	A-7	0	100	100	95-100	95-100	55-80	20-45
InB*: Insula----------	0-15	Gravelly sandy loam.	SM, GM	A-2, A-4, A-1	10-30	50-80	40-80	30-70	15-50	<20	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Quetico---------	0-9	Loam-------------	CL, ML, SM, SC	A-4	2-15	75-100	70-95	60-90	45-85	20-30	3-10
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
IoB*: Insula----------	0-15	Gravelly sandy loam.	SM, GM	A-2, A-4, A-1	10-30	50-80	40-80	30-70	15-50	<20	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
IoB*:											
Rock outcrop.											
IrB, IrC--------- Ira	0-8	Gravelly silt loam.	SM, ML, GM	A-2, A-4, A-1	0-5	55-80	55-70	40-65	20-55	<15	NP-2
	8-17	Gravelly fine sandy loam, loam, gravelly sandy loam.	SM, ML, GM	A-2, A-4, A-1	0-5	55-90	55-85	35-80	15-60	<15	NP-2
	17-41	Gravelly fine sandy loam, gravelly loam, loam.	GM, ML, SM	A-2, A-4	0-5	60-90	55-85	40-80	25-60	<15	NP-2
	41-62	Gravelly fine sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, GW-GM, SM, SW-SM	A-2, A-4, A-1	5-10	30-75	25-70	20-60	10-45	<15	NP-2
Ju--------------- Junius	0-8	Loamy fine sand	SM	A-2, A-4	0	100	95-100	65-85	20-50	---	NP
	8-26	Loamy fine sand, fine sand.	SM	A-2, A-4	0	100	95-100	60-85	20-45	---	NP
	26-60	Sand, fine sand, very fine sand.	SM, SW-SM, SP-SM	A-2, A-4, A-1, A-3	0	95-100	90-100	45-90	5-50	---	NP
KgA, KgB--------- Kingsbury	0-12	Silty clay-------	ML, MH	A-7	0	100	100	90-100	80-95	40-55	11-20
	12-28	Clay-------------	MH, CH	A-7	0	100	100	90-100	90-100	50-65	21-35
	28-60	Clay, silty clay	MH, CH	A-7	0	100	100	90-100	80-100	50-65	21-35
Kh*:											
Kingsbury-------	0-12	Silty clay-------	ML, MH	A-7	0	100	100	90-100	80-95	40-55	11-20
	12-28	Clay-------------	MH, CH	A-7	0	100	100	90-100	90-100	50-65	21-35
	28-60	Clay, silty clay	MH, CH	A-7	0	100	100	90-100	80-100	50-65	21-35
Livingston------	0-6	Mucky silty clay	CH, MH, CL, OH	A-7	0	100	100	90-100	85-100	40-85	10-40
	6-30	Clay-------------	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
	30-60	Clay, silty clay	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
LaB*, LaC*:											
Lagross---------	0-8	Shaly silt loam	GM, SM, ML, CL	A-5	5-10	65-90	60-85	50-80	40-70	40-50	5-10
	8-14	Shaly silt loam, shaly loam.	GM, SM, ML, SC	A-4	5-10	65-90	60-85	50-80	40-70	25-35	5-10
	14-36	Very shaly silt loam, very shaly loam.	GM, GM-GC, GC	A-1, A-2, A-4	10-25	30-50	25-45	20-45	15-40	25-35	5-10
	36-60	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM, GC	A-1, A-2, A-4	15-30	25-50	20-45	15-45	10-40	25-35	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
LaB*, LaC*:											
Heights	0-6	Silt loam	ML, SM	A-7, A-6	0	80-100	75-100	65-95	45-85	35-45	10-15
	6-27	Shaly silt loam, gravelly fine sandy loam, silt loam.	ML, SM, GM, GM	A-4, A-2	0-10	55-100	50-100	40-90	25-75	25-35	5-10
	27-34	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, GM-GC, CL	A-4, A-2, A-1	0-10	30-70	25-70	20-70	10-65	25-35	5-10
	34-60	Shaly loam, gravelly silt loam, very shaly fine sandy loam.	SM-SC, CL, GC, GM-GC	A-4, A-2, A-1	5-15	30-70	25-70	20-70	10-65	15-25	5-10
Lb Lamson	0-5	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-90	40-85	<20	NP-4
	5-30	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	95-100	80-100	55-95	45-65	<20	NP-4
	30-60	Fine sand, very fine sand, silt loam.	SM, ML	A-2, A-4	0	95-100	80-100	60-90	20-90	---	NP
Lc Livingston	0-6	Mucky silty clay	CH, MH, CL, OH	A-7	0	100	100	90-100	85-100	40-85	10-40
	6-30	Clay	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
	30-60	Clay	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
Ld Livingston	0-4	Silty clay loam	CH, MH, CL, ML	A-7	0	100	100	90-100	85-100	40-85	10-40
	4-30	Clay	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
	30-60	Clay	CH, MH	A-7	0	100	100	100	95-100	50-85	25-40
LoA, LoB, LoC, LoD Lowville	0-6	Silt loam	SM, ML	A-4	0	90-100	85-100	70-100	40-90	<35	NP-3
	6-24	Silt loam, very fine sandy loam.	SM, ML	A-4	0	90-100	85-100	70-100	40-90	<20	NP-3
	24-60	Gravelly loam, fine sandy loam, loam.	GM, SM, ML	A-2, A-4	0-5	55-95	50-90	35-85	20-70	<20	NP-3
	60-80	Loam, fine sandy loam, gravelly loam.	GM, SM, ML	A-2, A-4	0-5	55-95	50-90	35-85	20-70	<20	NP-3
Ma Madalin	0-14	Silt loam	ML, MH, OL, OH	A-6, A-7	0	95-100	95-100	85-100	65-100	35-65	10-25
	14-30	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	95-100	95-100	85-100	70-100	38-65	20-35
	30-60	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	75-100	70-100	65-100	60-100	35-60	15-35

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MdA, MdB, MdC, MdD------------- Madrid	0-8	Sandy loam-------	ML, SM	A-2, A-4	0	80-100	75-100	50-90	30-90	30-40	5-10
	8-32	Sandy loam, gravelly loam, gravelly silt loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4	0-5	60-95	55-90	40-90	25-80	20-30	5-10
	32-38	Fine sandy loam, gravelly loam, gravelly silt loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4	0-5	60-95	55-90	40-90	25-80	20-30	5-10
	38-60	Gravelly fine sandy loam, silt loam, very gravelly loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4, A-1	0-5	50-95	45-90	35-90	20-80	20-30	5-10
MnB, MnC--------- Manlius	0-7	Shaly silt loam	ML, GM, SM, CL-ML	A-4, A-2	5-25	55-80	50-75	35-75	25-70	25-35	4-10
	7-16	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM	A-2, A-4, A-1	10-25	25-60	20-55	15-55	10-50	25-35	4-10
	16-36	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM	A-1, A-2, A-4	10-25	20-60	15-55	10-55	5-50	25-35	4-10
	36-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MoA, MoB--------- Massena	0-9	Silt loam--------	CL, SC	A-6, A-7	0	80-95	75-90	65-90	45-80	35-45	12-20
	9-27	Gravelly fine sandy loam, gravelly sandy loam, loam.	GC, CL, CL-ML, SM-SC	A-4, A-6, A-2, A-1	0-5	55-95	50-90	35-85	15-65	15-25	5-15
	27-60	Gravelly fine sandy loam, gravelly loam, very gravelly sandy loam.	GC, CL, SC, CL-ML	A-4, A-6, A-2, A-1	0-5	40-95	35-90	20-85	10-65	15-25	5-15
MpB------------- Massena	0-9	Very stony loam	GC, SC, CL	A-6, A-7, A-2	5-10	55-75	50-70	40-65	30-60	35-45	12-20
	9-27	Gravelly fine sandy loam, gravelly sandy loam, loam.	GC, SM-SC, CL, CL-ML	A-4, A-6, A-2, A-1	0-5	55-95	50-90	35-85	15-65	15-25	5-15
	27-60	Gravelly fine sandy loam, gravelly loam, very gravelly sandy loam.	GC, CL, SC, CL-ML	A-4, A-6, A-2, A-1	0-5	40-95	35-90	20-85	10-65	15-25	5-15
MtB------------- Millsite	0-6	Loam-------------	SM, ML, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	15-20	1-6
	6-28	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	15-20	1-6
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
MuC*, MuE*:											
Millsite--------	0-6	Loam------------	SM, ML, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	15-20	1-6
	6-28	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	15-20	1-6
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Mv--------------- Minoa	0-8	Fine sandy loam	ML, SM	A-4	0	95-100	90-100	65-95	35-75	<20	NP-4
	8-27	Loamy very fine sand, silt loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-95	35-90	<20	NP-4
	27-60	Loamy fine sand, fine sandy loam, silt loam.	SM, ML	A-2, A-4	0	95-100	90-100	60-100	20-90	<20	NP-4
MwA, MwB--------- Muskellunge	0-12	Silt loam--------	ML, MH, CL, CH	A-6, A-7	0	90-100	90-100	70-100	55-90	30-55	10-25
	12-26	Silty clay loam, silty clay.	CH, CL	A-6, A-7	0	90-100	90-100	80-100	75-95	30-55	15-30
	26-30	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	90-100	75-100	50-95	30-55	15-30
	30-60	Stratified silty clay to very fine sand.	CH, CL, ML, CL-ML	A-7, A-6, A-4	0	90-100	90-100	75-100	65-95	10-55	NP-30
MxC*:											
Muskellunge-----	0-12	Silt loam--------	ML, MH, CL, CH	A-6, A-7	0	90-100	90-100	70-100	55-90	30-55	10-25
	12-26	Silty clay loam, silty clay.	CH, CL	A-6, A-7	0	90-100	90-100	80-100	75-95	30-55	15-30
	26-30	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	90-100	75-100	50-95	30-55	15-30
	30-60	Stratified silty clay to very fine sand.	CH, CL, ML, CL-ML	A-7, A-6, A-4	0	90-100	90-100	75-100	65-95	15-55	NP-30
Millsite--------	0-6	Loam------------	SM, ML, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	15-20	1-6
	6-28	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	15-20	1-6
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
NaC-------------- Nassau	0-5	Shaly silt loam	ML, GM, SM, CL-ML	A-2, A-4	5-20	55-85	50-80	40-75	25-70	25-37	4-10
	5-14	Very shaly silt loam, very shaly loam.	GM, GM-GC	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	25-35	4-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
NbF*:											
Nassau----------	0-5	Shaly silt loam	ML, GM, SM, CL-ML	A-2, A-4	5-20	55-85	50-80	40-75	25-70	25-37	4-10
	5-14	Very shaly silt loam, very shaly loam.	GM, GM-GC	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	25-35	4-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Manlius---------	0-7	Shaly silt loam	ML, GM, SM, CL-ML	A-4, A-2	5-25	55-80	50-75	35-75	25-70	25-35	4-10
	7-16	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM	A-2, A-4, A-1	10-25	25-60	20-55	15-55	10-50	25-35	4-10
	16-36	Very shaly silt loam, very shaly loam.	GM, GM-GC, GW-GM	A-1, A-2, A-4	10-25	20-60	15-55	10-55	5-50	25-35	4-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
N1A, N1B, N1C, N1D------------- Nellis	0-9	Loam-------------	ML, SM	A-4	0-5	80-100	75-95	50-95	35-85	30-35	1-5
	9-21	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	21-72	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, SM, GM-GC, SM-SC	A-2, A-4, A-1	0-5	40-95	35-90	20-85	10-70	<25	NP-5
NmE*:											
Nellis----------	0-9	Loam-------------	ML, SM	A-4	0-5	80-100	75-95	50-95	35-85	30-35	1-5
	9-21	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	21-72	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, SM, GM-GC, SM-SC	A-2, A-4, A-1	0-5	40-95	35-90	20-85	10-70	<25	NP-5
Madrid----------	0-8	Fine sandy loam	ML, SM	A-2, A-4	0	80-100	75-100	50-90	30-90	30-40	5-10
	8-32	Fine sandy loam, gravelly loam, gravelly silt loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4	0-5	60-95	55-90	40-90	25-80	20-30	5-10
	32-38	Fine sandy loam, gravelly loam, gravelly silt loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4	0-5	60-95	55-90	40-90	25-80	20-30	5-10
	38-60	Gravelly fine sandy loam, silt loam, very gravelly loam.	GM-GC, SM-SC, SC, CL-ML	A-2, A-4, A-1	0-5	50-95	45-90	35-90	20-80	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Nn--------------- Newstead	0-8	Silt loam--------	ML, SM	A-2, A-4, A-1	0-5	80-100	75-95	45-95	20-85	25-40	2-10
	8-22	Silt loam, loam, gravelly sandy loam.	ML, GM, SM, CL-ML	A-1, A-2, A-4	0-5	55-100	50-95	30-95	15-85	15-25	2-7
	22-30	Flaggy sandy loam, very gravelly loam, flaggy silt loam.	CL-ML, ML, SM, GM	A-1, A-2, A-4	5-30	30-90	25-80	15-75	10-70	15-25	2-7
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
NoA, NoB--------- Niagara	0-13	Silt loam--------	ML	A-4, A-7, A-6, A-5	0	95-100	95-100	70-100	55-90	30-45	5-15
	13-35	Silt loam, silty clay loam, very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-100	25-35	3-13
	35-75	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-100	25-35	3-13
NpB-------------- Niagara	0-13	Silt loam--------	ML	A-4, A-7, A-6, A-5	0	95-100	95-100	70-100	55-90	30-45	5-15
	13-29	Silt loam, silty clay loam, very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-100	25-35	3-13
	29-48	Silt loam, very fine sandy loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	95-100	90-100	70-100	25-35	3-13
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pa--------------- Palms	0-45	Muck-------------	PT	A-8	---	---	---	---	---	---	---
	45-65	Clay loam, silty clay loam, fine sandy loam.	CL-ML, CL	A-4, A-6	0	85-100	80-100	70-95	50-90	25-40	5-20
PhA, PhB--------- Phelps	0-7	Gravelly loam----	ML, SM, GM, CL-ML	A-2, A-4, A-1	0-25	50-80	45-75	25-75	15-70	20-35	2-10
	7-30	Gravelly loam, gravelly clay loam, silt loam.	ML, SM, GM, CL-ML	A-2, A-4	0-25	50-95	45-90	35-90	25-70	20-35	2-10
	30-36	Gravelly loam, gravelly sandy loam, silt loam.	ML, SM, GM, CL-ML	A-1, A-2, A-4	0-25	50-95	45-90	25-90	15-70	20-35	2-10
	36-60	Stratified very gravelly sand to loamy sand.	GW, GP, GM, GW-GM	A-1	5-30	15-55	10-50	5-40	0-15	<20	NP-2
PkB*: Pinckney--------	0-7	Silt loam--------	ML, SM	A-4	0-5	80-100	75-100	65-100	40-90	20-30	1-6
	7-22	Silt loam, loam, channery very fine sandy loam.	ML, SM	A-4	0-10	75-100	70-100	60-100	35-90	20-30	1-6
	22-64	Loam, channery fine sandy loam.	ML, SM, GM, CL-ML	A-4, A-2, A-1	5-10	55-90	50-85	35-80	20-65	15-25	1-6
	64-72	Loam, channery fine sandy loam.	ML, SM, GM, CL-ML	A-4, A-2, A-1	5-15	50-90	45-85	30-80	20-65	15-25	1-6

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PkB*:											
Ensley	0-8	Loam	ML, CL-ML	A-4	0-10	90-100	85-100	75-90	50-65	<25	NP-6
	8-26	Sandy loam, sandy clay loam, fine sandy loam.	SC	A-6, A-4, A-2	0-10	85-100	85-100	55-90	25-50	20-30	8-16
	26-60	Sandy loam, fine sandy loam.	SM-SC, SM	A-2, A-4	0-10	85-95	80-95	50-75	20-40	<20	NP-7
Pm*, Pn*. Pits											
PoB, PoC Plainfield	0-8	Sand	SP-SM, SM, SP	A-3, A-2, A-1	0	75-100	75-100	40-80	3-35	---	NP
	8-28	Sand	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-70	1-15	---	NP
	28-65	Sand, fine sand, coarse sand.	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-90	1-15	---	NP
PpD*:											
Plainfield	0-8	Sand	SP-SM, SM, SP	A-3, A-2, A-1	0	75-100	75-100	40-80	3-35	---	NP
	8-28	Sand	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-70	1-15	---	NP
	28-65	Sand, fine sand, coarse sand.	SP, SM, SP-SM	A-3, A-1, A-2	0	75-100	75-100	40-90	1-15	---	NP
Windsor	0-5	Loamy fine sand	SM	A-2, A-1	0	95-100	85-100	35-85	20-35	---	NP
	5-28	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-2, A-1	0	95-100	85-100	45-95	10-30	---	NP
	28-60	Sand, fine sand	SP-SM, SM	A-2, A-3, A-1	0	90-100	75-100	40-95	5-20	---	NP
Ps Pootatuck	0-8	Fine sandy loam	SM, ML	A-2, A-4	0	95-100	80-100	55-95	30-75	<25	NP-4
	8-24	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	95-100	80-100	55-85	30-50	<20	NP-2
	24-60	Stratified loamy fine sand to very gravelly coarse sand.	SP, SP-SM, SM	A-1, A-2, A-3	0-15	70-100	45-100	25-75	0-25	---	NP
QeB*:											
Quetico	0-9	Loam	CL, ML, SM, SC	A-4	2-15	75-100	70-95	60-90	45-85	20-30	3-10
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
RhA, RhB Rhinebeck	0-12	Silt loam	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	12-26	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30
	26-60	Silty clay loam, silty clay, clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
RkC*:											
Rhinebeck	0-12	Silt loam	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	12-26	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30
	26-60	Silty clay loam, silty clay, clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30
Chatfield	0-4	Loam	SM, ML, SM-SC, CL-ML	A-4, A-2	0-5	80-95	75-90	50-80	25-65	10-20	1-6
	4-30	Loam, gravelly loam, gravelly sandy loam.	SM, ML, GM, CL-ML	A-4, A-2, A-1	0-5	60-95	55-90	35-80	15-65	10-20	1-6
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Rn Rhinebeck Variant	0-8	Silty clay loam	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	8-19	Silty clay loam, silty clay, silt loam.	CH, CL	A-6, A-7	0	90-100	85-100	80-100	70-100	30-55	10-25
	19-33	Silty clay loam, silty clay.	CH, CL	A-6, A-7	0	90-100	85-100	80-100	70-100	30-55	15-30
	33-60	Silty clay, silty clay loam.	CH, CL	A-6, A-7	0	90-100	85-100	80-100	70-100	30-55	15-30
Ru Ruse	0-6	Gravelly loam	SM, CL-ML	A-2, A-4	0-15	65-75	50-70	30-65	15-60	<35	5-10
	6-16	Very gravelly sandy loam, very gravelly fine sandy loam.	SM, GM, GM-GL	A-2, A-4	0-15	35-55	30-50	20-45	10-30	<35	NP-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sa*:											
Saprists.											
Aquents.											
Sc Scarboro	0-12	Mucky loamy fine sand.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	85-100	45-85	5-50	---	NP
	12-24	Loamy sand, fine sand, sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	85-100	45-80	5-35	---	NP
	24-60	Stratified loamy fine sand to coarse sand.	SP, SM, SP-SM	A-1, A-2, A-3	0	80-100	75-100	45-80	0-35	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
SdA, SdB--------- Scriba	0-17	Gravelly silt loam.	SM, GM, ML, CL-ML	A-2, A-4, A-1	0-5	55-80	50-75	40-75	20-70	<20	NP-5
	17-27	Gravelly fine sandy loam, very gravelly sandy loam, gravelly silt loam.	GM, ML, SM, CL-ML	A-2, A-4, A-1	0-5	35-75	30-70	20-65	15-60	<20	NP-5
	27-60	Gravelly fine sandy loam, very gravelly sandy loam, gravelly silt loam.	GM, ML, SM, CL-ML	A-2, A-4, A-1	5-10	35-75	30-70	20-65	15-60	<20	NP-5
Sh--------------- Shaker	0-12	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	12-24	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	24-60	Silty clay, silty clay loam, clay.	CL, CL-ML	A-6, A-7	0	100	95-100	90-100	75-95	25-50	5-25
SoB, SoC, SoD---- Sodus	0-8	Gravelly silt loam.	SM, ML, GM	A-2, A-4	0-5	60-85	55-80	40-75	20-70	<20	NP-2
	8-20	Very fine sandy loam, loam, gravelly fine sandy loam.	SM, ML, GM	A-2, A-4, A-1	0-5	60-90	55-85	40-80	20-65	<20	NP-2
	20-60	Gravelly very fine sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, SM, ML	A-2, A-4, A-1	0-5	40-90	35-85	25-80	15-65	<20	NP-2
Su--------------- Sun	0-8	Silt loam--------	ML, CL-ML, SM, SM-SC	A-1, A-2, A-4	0-5	80-100	75-100	45-95	20-85	<20	NP-5
	8-22	Gravelly fine sandy loam, sandy loam, silt loam.	GM, ML, SM, SM-SC	A-1, A-2, A-4	0-5	55-95	50-90	30-85	15-65	<20	NP-5
	22-60	Gravelly fine sandy loam, gravelly loam, very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2, A-4	0-5	45-75	40-70	25-65	15-50	<20	NP-5
Sv--------------- Sun	0-8	Very stony silt loam.	GM, SM, ML, GM-GC	A-1, A-2, A-4	5-10	55-75	50-70	30-65	15-60	<20	NP-5
	8-22	Gravelly fine sandy loam, sandy loam, silt loam.	GM, SM, ML, GM-GC	A-1, A-2, A-4	0-5	55-95	50-90	30-85	15-65	<20	NP-5
	22-60	Gravelly fine sandy loam, gravelly loam, very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2, A-4	0-5	45-75	40-70	25-65	15-50	<20	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Te--------------- Teel	0-8	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	70-90	15-35	2-15
	8-40	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	65-90	15-35	2-15
	40-60	Silt loam, fine sandy loam, gravelly very fine sandy loam.	ML, SM, CL, SM-SC	A-4, A-6, A-2	0-5	75-100	70-100	50-100	30-90	<35	NP-15
Ua, Ub. Udorthents											
Uc*: Udorthents.											
Udifluvents.											
Ur*. Urban land											
VeB, VeC--------- Vergennes	0-8	Silty clay loam	MH, CH, CL, ML	A-7	0	100	100	90-100	85-100	40-80	20-40
	8-29	Clay-------------	MH, CH	A-7	0	100	100	95-100	95-100	55-80	20-45
	29-72	Clay-------------	MH, CH	A-7	0	100	100	95-100	95-100	55-80	20-45
Wa--------------- Wareham	0-5	Loamy fine sand	SM, SP-SM	A-1, A-2	0	85-100	75-100	40-85	10-35	---	NP
	5-24	Loamy coarse sand, loamy fine sand, sand.	SM, SP-SM	A-1, A-2, A-3	0	85-100	75-100	35-85	5-35	---	NP
	24-60	Loamy coarse sand, loamy fine sand, coarse sand.	SM, SP-SM, SP	A-1, A-2, A-3	0	85-100	75-100	25-75	0-30	---	NP
We--------------- Wayland	0-6	Silt loam--------	ML, OL	A-7, A-5	0	100	95-100	90-100	70-95	40-50	5-15
	6-60	Silt loam, silty clay loam.	ML, CL-ML, CL	A-6, A-4, A-7	0	100	95-100	90-100	70-95	25-45	5-15
Wh--------------- Whately	0-2	Muck-------------	PT	A-8	0	---	---	---	---	---	---
	2-18	Fine sandy loam, sandy loam, very fine sandy loam.	SM, ML, CL, SC	A-2, A-4	0	100	100	65-95	30-65	<30	NP-8
	18-60	Silty clay loam, silty clay, clay.	CL	A-6, A-7	0	100	100	100	75-95	28-50	12-30
Wk--------------- Willette	0-42	Muck-------------	PT	---	---	---	---	---	---	---	---
	42-60	Silty clay loam, clay.	CL, CH	A-7	0	100	95-100	90-100	85-95	45-60	25-34
WmB-------------- Williamson	0-8	Silt loam--------	ML, SM	A-4, A-6, A-7	0	95-100	95-100	60-100	35-95	30-45	5-15
	8-18	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4	0	95-100	95-100	90-100	70-95	<30	NP-10
	18-42	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4	0	95-100	95-100	90-100	70-95	<30	NP-10
	42-60	Stratified silt loam to very fine sandy loam.	ML, CL-ML, CL	A-4	0	95-100	95-100	90-100	70-95	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
WnB, WnC--------- Wilpoint	0-9	Silty clay loam	MH, CH	A-7	0	100	95-100	90-100	80-90	55-80	15-50
	9-22	Clay-------------	MH, CH	A-7	0	100	95-100	90-100	70-95	50-80	20-45
	22-29	Clay, silty clay	ML, CL, MH, CH	A-7	0	100	95-100	90-100	70-95	40-60	15-25
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
WoB, WoC--------- Windsor	0-5	Loamy fine sand	SM	A-2, A-1	0	95-100	85-100	35-85	20-35	---	NP
	5-28	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-2, A-1	0	95-100	85-100	45-95	10-30	---	NP
	28-60	Sand, fine sand	SP-SM, SM	A-2, A-3, A-1	0	90-100	75-100	40-95	5-20	---	NP

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
AgA, AgB---------	0-10	4-10	1.10-1.20	2.0-6.0	0.13-0.25	4.5-6.5	Low-----------	0.28	3	1-5
Agawam	10-16	1-10	1.20-1.40	2.0-6.0	0.11-0.21	4.5-6.5	Low-----------	0.37		
	16-30	1-3	1.30-1.40	2.0-20	0.11-0.18	4.5-6.5	Low-----------	0.28		
	30-60	1-2	1.30-1.40	6.0-20	0.01-0.09	4.5-6.5	Low-----------	0.17		
AhA, AhB---------	0-8	20-40	1.10-1.40	0.2-2.0	0.16-0.21	3.6-6.0	Low-----------	0.43	3	3-8
Allis	8-28	35-60	1.20-1.50	<0.2	0.08-0.14	3.6-6.0	Moderate-----	0.32		
	28	---	---	---	---	---	-------------	----		
AlA, AlB, AlC, AlD, AlE--------	0-6	1-12	1.35-1.65	2.0-6.0	0.06-0.14	5.1-7.3	Low-----------	0.17	3	2-5
Alton	6-33	1-12	1.45-1.65	2.0-6.0	0.07-0.09	5.1-7.3	Low-----------	0.17		
	33-65	1-4	1.45-1.65	>6.0	0.02-0.04	6.1-7.8	Low-----------	0.17		
AmA, AmB---------	0-9	5-18	1.10-1.40	0.6-2.0	0.13-0.20	5.6-7.8	Low-----------	0.32	3	2-6
Amenia	9-19	5-18	1.30-1.60	0.6-2.0	0.08-0.19	5.6-7.8	Low-----------	0.24		
	19-60	5-18	1.70-1.95	0.06-0.2	0.08-0.12	7.4-8.4	Low-----------	0.24		
AnA, AnB---------	0-8	8-30	1.10-1.40	0.6-2.0	0.17-0.22	5.6-7.3	Low-----------	0.37	3	3-6
Angola	8-20	18-35	1.60-1.85	0.06-0.2	0.11-0.19	5.6-7.3	Low-----------	0.28		
	20-24	10-30	1.70-1.95	0.06-0.2	0.06-0.13	6.6-7.8	Low-----------	0.28		
	24	---	---	---	---	---	-------------	----		
ArB, ArC---------	0-7	5-18	1.10-1.40	2.0-6.0	0.09-0.17	4.5-7.3	Low-----------	0.28	3	1-3
Arkport	7-23	3-15	1.25-1.55	2.0-6.0	0.06-0.16	4.5-7.3	Low-----------	0.28		
	23-56	1-5	1.25-1.55	2.0-6.0	0.06-0.12	6.1-8.4	Low-----------	0.28		
	56-80	1-5	1.25-1.55	2.0-6.0	0.02-0.06	6.1-8.4	Low-----------	0.28		
Be*. Beaches										
BfF--------------	0-3	10-17	1.10-1.40	0.6-2.0	0.12-0.18	5.6-7.3	Low-----------	0.24	2	2-6
Benson	3-12	10-17	1.20-1.50	0.6-2.0	0.08-0.16	6.1-7.8	Low-----------	0.28		
	12	---	---	---	---	---	-------------	----		
BgB*:										
Benson-----------	0-3	10-17	1.10-1.40	0.6-2.0	0.12-0.18	5.6-7.3	Low-----------	0.24	2	2-6
	3-12	10-17	1.20-1.50	0.6-2.0	0.08-0.16	6.1-7.8	Low-----------	0.28		
	12	---	---	---	---	---	-------------	----		
Galoo------------	0-4	10-27	1.10-1.40	0.6-2.0	0.14-0.20	5.6-7.8	Low-----------	0.32	2	2-6
	4-7	10-27	1.20-1.50	0.6-2.0	0.12-0.19	5.6-7.8	Low-----------	0.24		
	7	---	---	---	---	---	-------------	----		
BhB, BhC, BhD, BhF--------------	0-6	3-10	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low-----------	0.24	3	2-5
Bice	6-18	3-10	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low-----------	0.20		
	18-26	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low-----------	0.24		
	26-70	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low-----------	0.24		
BkC--------------	0-6	3-8	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low-----------	0.20	3	2-5
Bice	6-26	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low-----------	0.32		
	26-70	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low-----------	0.24		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
BlB*, BlC*:										
Bice	0-6	3-10	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low	0.24	3	2-5
	6-18	3-10	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low	0.20		
	18-26	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low	0.24		
	26-70	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
Haights	0-6	10-18	1.10-1.40	0.6-2.0	0.13-0.21	4.5-6.0	Low	0.32	3	3-7
	6-27	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low	0.24		
	27-34	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low	0.24		
	34-60	5-10	1.45-1.65	0.6-2.0	0.09-0.20	5.1-6.5	Low	0.24		
BmB*, BmC*, BmD*:										
Bice	0-6	3-10	1.00-1.25	0.6-6.0	0.08-0.23	4.5-6.0	Low	0.24	3	2-5
	6-18	3-10	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low	0.20		
	18-26	3-8	1.40-1.65	0.6-6.0	0.05-0.20	4.5-6.0	Low	0.24		
	26-70	1-8	1.45-1.70	0.6-6.0	0.05-0.16	4.5-6.0	Low	0.24		
Pinckney	0-7	10-27	1.10-1.40	0.6-2.0	0.14-0.21	4.5-6.0	Low	0.32	3	3-8
	7-22	18-27	1.20-1.50	0.6-2.0	0.12-0.20	4.5-6.0	Low	0.24		
	22-64	10-27	1.60-2.00	<0.2	0.02-0.06	5.1-6.5	Low	0.24		
	64-72	10-27	1.60-1.95	0.06-0.6	0.07-0.14	5.1-7.3	Low	0.24		
BnA, BnB, BnC Blasdell	0-8	6-18	1.10-1.40	2.0-6.0	0.10-0.17	4.5-6.0	Low	0.28	3	3-6
	8-36	6-18	1.25-1.55	2.0-6.0	0.07-0.11	4.5-6.0	Low	0.17		
	36-60	6-18	1.45-1.65	2.0-6.0	0.05-0.09	5.1-6.5	Low	0.17		
BoA, BoB Bombay	0-8	8-22	1.10-1.40	0.6-2.0	0.11-0.19	5.1-6.5	Low	0.32	3	3-9
	8-39	8-18	1.30-1.60	0.2-2.0	0.09-0.19	5.1-7.3	Low	0.24		
	39-65	5-15	1.50-1.70	0.2-0.6	0.08-0.14	6.6-8.4	Low	0.24		
BpB, BpC Bonaparte	0-5	3-8	1.10-1.40	6.0-20	0.04-0.06	5.1-7.3	Low	0.17	3	2-6
	5-26	1-5	1.25-1.55	6.0-20	0.03-0.05	5.1-7.3	Low	0.17		
	26-60	0-3	1.45-1.65	>6.0	0.01-0.02	7.4-8.4	Low	0.17		
Bt Boots	0-11	---	0.16-0.45	0.6-6.0	0.35-0.45	5.6-7.3	-------	----	2	>50
	11-99	---	0.16-0.28	0.6-6.0	0.35-0.45	5.6-7.3	-------	----		
Ca Canandaigua	0-10	18-35	1.00-1.25	0.6-2.0	0.20-0.35	5.6-7.8	Low	0.49	5	4-15
	10-58	18-35	1.20-1.40	0.2-0.6	0.19-0.20	6.1-7.8	Low	0.49		
	58-72	18-35	1.15-1.40	0.2-0.6	0.19-0.20	6.6-8.4	Low	0.64		
Cb Canandaigua	0-10	18-35	1.00-1.25	0.6-2.0	0.25-0.40	5.6-7.8	Low	0.49	5	10-20
	10-58	18-35	1.20-1.40	0.2-0.6	0.19-0.20	6.1-7.8	Low	0.49		
	58-72	18-35	1.15-1.40	0.2-0.6	0.19-0.20	6.6-8.4	Low	0.64		
Cc Carbondale	0-36	---	0.15-0.40	0.2-6.0	0.35-0.45	5.1-7.8	-------	----	2	40-65
	36-92	---	0.10-0.20	0.6-6.0	0.45-0.55	5.1-7.8	-------	----		
Cd Carlisle	0-63	---	0.13-0.23	0.2-6.0	0.35-0.45	4.5-7.3	-------	----	2	>70
ChB Chatfield	0-4	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-6
	4-30	7-18	1.20-1.50	0.6-6.0	0.08-0.15	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	-------	----		
CkC*, CkE*:										
Chatfield	0-4	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low	0.24	3	2-6
	4-30	7-18	1.20-1.50	0.6-6.0	0.08-0.15	4.5-6.0	Low	0.20		
	30	---	---	---	---	---	-------	----		
Rock outcrop.										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
ClA, ClB: Chaumont	0-5	35-80	0.90-1.25	<0.2	0.14-0.19	5.6-7.3	High	0.49	3	3-10
	5-11	35-80	1.20-1.40	<0.2	0.14-0.17	5.6-7.3	High	0.28		
	11-22	60-90	1.20-1.40	<0.2	0.12-0.14	5.6-7.3	High	0.28		
	22-27	40-90	1.30-1.50	<0.2	0.12-0.14	6.6-8.4	High	0.28		
	27	---	---	---	---	---	---	---		
CmA, CmB: Claverack	0-8	1-3	1.20-1.50	6.0-20	0.08-0.09	5.1-7.3	Low	0.17	3	2-6
	8-21	1-3	1.20-1.50	6.0-20	0.05-0.07	5.1-7.3	Low	0.17		
	21-60	30-50	1.15-1.40	<0.2	0.12-0.17	6.6-8.4	Moderate	0.28		
CnB, CnC, CnC3: Collamer	0-8	15-27	1.20-1.50	0.6-2.0	0.14-0.21	5.1-7.3	Low	0.49	3	2-5
	8-18	15-27	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.3	Low	0.49		
	18-32	18-35	1.20-1.50	0.06-0.6	0.16-0.20	5.6-7.8	Low	0.49		
	32-60	4-27	1.45-1.65	0.06-0.6	0.12-0.20	6.1-8.4	Low	0.64		
CoB: Collamer	0-8	15-27	1.20-1.50	0.6-2.0	0.14-0.21	5.1-7.3	Low	0.49	3	2-5
	8-18	15-27	1.20-1.50	0.6-2.0	0.14-0.20	5.1-7.3	Low	0.49		
	18-32	18-35	1.20-1.50	0.06-0.6	0.16-0.20	5.6-7.8	Low	0.49		
	32-48	4-27	1.45-1.65	0.06-0.6	0.12-0.20	6.1-8.4	Low	0.64		
	48	---	---	---	---	---	---	---		
Cp: Covington	0-6	40-90	1.10-1.60	<0.2	0.14-0.16	5.6-7.3	High	0.49	3	5-20
	6-32	60-90	1.30-1.65	<0.06	0.12-0.14	5.6-7.8	High	0.49		
	32-64	60-90	1.40-1.60	<0.06	0.12-0.14	6.6-8.4	High	0.49		
DcB, DcC, DcD: Danley	0-14	15-35	1.10-1.40	0.6-2.0	0.15-0.20	5.1-6.5	Low	0.37	3	3-8
	14-26	15-35	1.20-1.50	0.2-0.6	0.09-0.16	5.1-6.5	Low	0.37		
	26-46	27-35	1.20-1.50	0.2-0.6	0.09-0.16	5.6-7.8	Moderate	0.28		
	46-60	15-35	1.70-1.95	0.06-0.2	0.09-0.14	7.4-8.4	Low	0.28		
DdA, DdB, DdC: Darien	0-14	15-35	1.10-1.40	0.6-2.0	0.15-0.20	5.6-7.3	Low	0.37	3	3-8
	14-26	28-35	1.50-1.75	0.2-0.6	0.09-0.16	6.1-7.3	Moderate	0.24		
	26-43	20-35	1.50-1.75	0.2-0.6	0.09-0.16	7.4-8.4	Low	0.24		
	43-60	20-35	1.50-1.85	0.06-0.2	0.05-0.14	7.4-8.4	Low	0.24		
DeB: Deerfield	0-7	2-7	1.00-1.20	6.0-20	0.07-0.13	4.5-6.5	Low	0.17	5	1-4
	7-28	1-7	1.20-1.45	6.0-20	0.01-0.13	4.5-6.5	Low	0.17		
	28-60	0-5	1.40-1.50	>6.0	0.01-0.08	4.5-6.5	Low	0.17		
Dp*. Dumps										
ElA, ElB: Elmridge	0-10	2-8	1.05-1.30	2.0-6.0	0.14-0.24	5.1-6.5	Low	0.24	3	2-6
	10-23	2-8	1.35-1.60	2.0-6.0	0.13-0.22	5.1-6.5	Low	0.24		
	23-60	35-60	1.55-1.80	<0.2	0.12-0.18	5.6-7.8	Low	0.49		
Em: Ensley	0-8	10-18	1.30-1.60	2.0-6.0	0.17-0.22	6.1-7.8	Low	0.32	5	4-7
	8-26	10-25	1.30-1.70	0.6-2.0	0.10-0.18	6.6-8.4	Moderate	0.20		
	26-60	8-18	1.45-1.70	2.0-6.0	0.08-0.12	7.4-8.4	Low	0.20		
En: Ensley	0-8	12-18	1.30-1.60	2.0-6.0	0.10-0.20	6.1-7.8	Low	0.17	5	4-7
	8-26	10-25	1.30-1.70	0.6-2.0	0.10-0.18	6.6-8.4	Moderate	0.17		
	26-60	8-18	1.45-1.70	2.0-6.0	0.08-0.12	7.4-8.4	Low	0.17		
FaB: Farmington	0-8	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-6.5	Low	0.32	2	2-6
	8-19	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	19	---	---	---	---	---	---	---		
Fu*: Fluvaquents.										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Fu*:										
Udifluvents.										
GaA, GaB--------- Galen	0-8	2-8	1.33-1.68	0.6-6.0	0.09-0.17	5.1-7.3	Low----------	0.28	3	2-4
	8-26	2-8	1.45-1.70	0.6-6.0	0.08-0.16	5.6-7.3	Low----------	0.28		
	26-40	1-4	1.45-1.70	0.6-6.0	0.06-0.16	5.6-7.3	Low----------	0.28		
	40-60	1-4	1.45-1.70	2.0-6.0	0.06-0.09	5.6-7.8	Low----------	0.17		
GbB*:										
Galoo-----------	0-4	10-27	1.10-1.40	0.6-2.0	0.14-0.20	5.6-7.8	Low----------	0.32	2	2-6
	4-7	10-27	1.20-1.50	0.6-2.0	0.12-0.19	5.6-7.8	Low----------	0.24		
	7	---	---	---	---	---	-------------	----		
Rock outcrop.										
GcB*:										
Galoo-----------	0-4	10-27	1.10-1.40	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.32	2	2-6
	4-7	10-27	1.20-1.50	0.6-2.0	0.12-0.19	4.5-5.5	Low----------	0.24		
	7	---	---	---	---	---	-------------	----		
Rock outcrop.										
GlA, GlB, GlC---- Galway	0-9	7-18	1.10-1.40	0.6-2.0	0.15-0.21	5.6-7.3	Low----------	0.32	3	2-6
	9-23	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low----------	0.24		
	23-26	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low----------	0.24		
	26	---	---	---	---	---	-------------	----		
GmC-------------- Galway	0-9	7-18	1.10-1.40	0.6-2.0	0.09-0.16	5.6-7.3	Low----------	0.24	3	2-6
	9-23	5-18	1.20-1.50	0.6-2.0	0.08-0.19	5.6-7.8	Low----------	0.24		
	23-26	3-18	1.20-1.50	0.6-2.0	0.04-0.14	7.4-8.4	Low----------	0.24		
	26	---	---	---	---	---	-------------	----		
Gr--------------- Granby	0-10	2-14	1.20-1.60	6.0-20	0.10-0.12	5.6-7.3	Low----------	0.17	5	4-6
	10-38	0-14	1.45-1.65	6.0-20	0.05-0.12	5.6-7.8	Low----------	0.17		
	38-60	0-10	1.45-1.65	6.0-20	0.05-0.09	6.6-8.4	Low----------	0.17		
GtA, GtB, GtC, GtD, GtE-------- Groton	0-8	2-8	1.00-1.30	2.0-20	0.07-0.15	5.6-7.3	Low----------	0.17	3	1-4
	8-19	2-6	1.25-1.50	2.0-20	0.04-0.12	5.6-7.3	Low----------	0.17		
	19-39	2-5	1.30-1.60	>20	0.02-0.10	5.6-7.8	Low----------	0.17		
	39-90	0-2	1.40-1.70	>20	0.01-0.06	6.6-8.4	Low----------	0.10		
GuB-------------- Groton Variant	0-7	2-8	1.00-1.25	2.0-6.0	0.09-0.17	6.6-8.4	Low----------	0.17	3	2-6
	7-13	2-8	1.25-1.50	2.0-6.0	0.07-0.13	6.6-8.4	Low----------	0.17		
	13-39	0-2	1.40-1.65	6.0-20	0.01-0.04	6.6-8.4	Low----------	0.10		
	39	---	---	---	---	---	-------------	----		
Gv--------------- Guffin	0-7	35-80	1.00-1.25	<0.2	0.14-0.19	5.6-7.3	High---------	0.49	5	3-10
	7-19	60-90	1.20-1.40	<0.2	0.12-0.14	6.1-7.3	High---------	0.28		
	19-22	60-90	1.20-1.40	<0.2	0.12-0.14	6.6-8.4	High---------	0.28		
	22	---	---	---	---	---	-------------	----		
Gw--------------- Gulf	0-7	15-35	1.10-1.40	0.6-2.0	0.16-0.21	5.1-7.3	Low----------	0.37	5	4-10
	7-26	18-35	1.25-1.55	0.6-2.0	0.10-0.19	5.6-7.8	Low----------	0.28		
	26-60	15-35	1.45-1.65	0.6-2.0	0.05-0.12	5.6-7.8	Low----------	0.28		
HaB*:										
Haights---------	0-6	10-18	1.10-1.40	0.6-2.0	0.13-0.21	4.5-6.0	Low----------	0.32	3	3-7
	6-27	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low----------	0.24		
	27-34	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low----------	0.24		
	34-60	5-10	1.45-1.65	0.6-2.0	0.09-0.20	5.1-6.5	Low----------	0.24		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
HaB*:										
Gulf	0-7	15-35	1.10-1.40	0.6-2.0	0.16-0.21	5.1-7.3	Low	0.37	5	4-10
	7-26	18-35	1.25-1.55	0.6-2.0	0.10-0.19	5.6-7.8	Low	0.28		
	26-60	15-35	1.45-1.65	0.6-2.0	0.05-0.12	5.6-7.8	Low	0.28		
Hb	0-8	7-25	0.50-1.00	0.6-2.0	0.20-0.30	5.6-7.3	Low	0.24	5	10-25
Halsey	8-30	7-25	1.20-1.40	0.6-6.0	0.12-0.18	5.6-7.3	Low	0.24		
	30-60	2-10	1.40-1.60	6.0-20	0.02-0.07	6.1-8.4	Low	0.10		
Hc	0-10	8-18	1.15-1.40	0.6-2.0	0.18-0.21	6.1-7.3	Low	0.49	5	2-6
Hamlin	10-32	5-18	1.15-1.45	0.6-2.0	0.17-0.19	6.1-7.3	Low	0.49		
	32-54	5-18	1.15-1.45	0.6-2.0	0.17-0.19	6.6-7.8	Low	0.49		
	54-65	3-10	1.25-1.55	0.6-2.0	0.17-0.19	6.6-7.8	Low	0.49		
HeB, HeC	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate	0.37	3	3-6
Heuvelton	12-35	35-60	1.15-1.40	0.2-2.0	0.13-0.17	5.1-7.3	Moderate	0.28		
	35-60	35-60	1.15-1.65	<0.2	0.13-0.17	6.6-8.4	Moderate	0.28		
HmB*:										
Heuvelton	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate	0.37	3	3-6
	12-35	35-60	1.15-1.40	0.2-2.0	0.13-0.17	5.1-7.3	Moderate	0.28		
	35-60	35-60	1.15-1.65	<0.2	0.13-0.17	6.6-8.4	Moderate	0.28		
Millsite	0-6	3-8	1.00-1.25	0.6-6.0	0.12-0.16	4.5-6.5	Low	0.24	2	2-5
	6-28	1-8	1.45-1.70	0.6-6.0	0.08-0.15	4.5-6.5	Low	0.20		
	28	---	---	---	---	---	-------------	----		
Rock outcrop.										
HnB	0-6	4-8	1.00-1.20	6.0-20	0.03-0.18	3.6-6.0	Low	0.17	3	2-7
Hinckley	6-20	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	Low	0.17		
	20-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	Low	0.10		
HoB*, HoE*:										
Hinckley	0-6	4-8	1.00-1.20	6.0-20	0.03-0.18	3.6-6.0	Low	0.17	3	2-7
	6-20	1-5	1.20-1.40	6.0-20	0.01-0.10	3.6-6.0	Low	0.17		
	20-60	0-3	1.30-1.50	>20	0.01-0.06	3.6-6.0	Low	0.10		
Hoosic	0-8	1-10	1.10-1.40	2.0-20	0.05-0.12	4.5-5.5	Low	0.17	3-2	2-6
	8-16	1-10	1.25-1.55	2.0-20	0.05-0.11	4.5-5.5	Low	0.17		
	16-60	0-5	1.45-1.65	>20	0.01-0.05	4.5-6.0	Low	0.17		
HpB*:										
Hollis	0-4	3-10	1.10-1.40	0.6-6.0	0.12-0.20	4.5-6.0	Low	0.24	1	2-5
	4-16	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	16	---	---	---	---	---	-------------	----		
Galoo	0-4	10-27	1.10-1.40	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.32	2	2-6
	4-7	10-27	1.20-1.50	0.6-2.0	0.12-0.19	4.5-5.5	Low	0.24		
	7	---	---	---	---	---	-------------	----		
HrB*:										
Hollis	0-4	3-10	1.10-1.40	0.6-6.0	0.12-0.20	4.5-6.0	Low	0.24	1	2-5
	4-16	1-8	1.30-1.55	0.6-6.0	0.06-0.18	4.5-6.0	Low	0.32		
	16	---	---	---	---	---	-------------	----		
Rock outcrop.										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
HuB, HuC--------- Hudson	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-6
	12-16	35-60	1.15-1.40	<0.2	0.13-0.17	5.1-7.3	Moderate-----	0.28		
	16-59	25-60	1.15-1.40	<0.2	0.13-0.17	5.6-7.8	Moderate-----	0.28		
	59-70	35-60	1.15-1.40	<0.2	0.12-0.20	6.6-8.4	Moderate-----	0.28		
HvB*: Hudson----------	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-6
	12-16	35-60	1.15-1.40	<0.2	0.13-0.17	5.1-7.3	Moderate-----	0.28		
	16-59	25-60	1.15-1.40	<0.2	0.13-0.17	5.6-7.8	Moderate-----	0.28		
	59-70	35-60	1.15-1.40	<0.2	0.12-0.20	6.6-8.4	Moderate-----	0.28		
Chatfield-------	0-4	7-18	1.10-1.40	0.6-6.0	0.08-0.14	4.5-6.0	Low----------	0.20	3	2-6
	4-30	7-18	1.20-1.50	0.6-6.0	0.08-0.15	4.5-6.0	Low----------	0.20		
Rock outcrop.										
HyE3*: Hudson----------	0-12	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-6
	12-16	35-60	1.15-1.40	<0.2	0.13-0.17	5.1-7.3	Moderate-----	0.28		
	16-59	25-60	1.15-1.40	<0.2	0.13-0.17	5.6-7.8	Moderate-----	0.28		
	59-70	35-60	1.15-1.40	<0.2	0.12-0.20	6.6-8.4	Moderate-----	0.28		
Vergennes-------	0-8	25-90	1.25-1.55	<0.2	0.16-0.19	5.1-7.3	Moderate-----	0.49	3-2	2-6
	8-29	60-90	1.10-1.40	<0.06	0.15-0.18	5.1-7.3	Moderate-----	0.49		
	29-72	60-90	1.20-1.50	<0.06	0.15-0.18	7.9-8.4	Moderate-----	0.49		
InB*: Insula----------	0-15	4-12	1.40-1.60	2.0-6.0	0.09-0.14	4.5-6.0	Low----------	0.17	2	---
	15	---	---	---	---	---	-------------	----		
Quetico---------	0-9	10-25	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.32	1	---
	9	---	---	---	---	---	-------------	----		
IoB*: Insula----------	0-15	4-12	1.40-1.60	2.0-6.0	0.09-0.14	4.5-6.0	Low----------	0.17	2	---
	15	---	---	---	---	---	-------------	----		
Rock outcrop.										
IrB, IrC--------- Ira	0-8	5-18	1.10-1.40	0.6-2.0	0.09-0.14	4.5-7.3	Low----------	0.20	3	2-6
	8-17	5-18	1.20-1.50	0.6-2.0	0.08-0.14	5.1-6.0	Low----------	0.20		
	17-41	5-18	1.70-2.00	<0.06	0.02-0.04	5.6-7.3	Low----------	0.20		
	41-62	5-18	1.65-1.95	<0.06	0.02-0.04	6.1-7.8	Low----------	0.20		
Ju--------------- Junius	0-8	1-4	1.20-1.50	2.0-6.0	0.06-0.16	5.6-7.3	Low----------	0.17	5	2-8
	8-26	0-2	1.20-1.50	6.0-20	0.04-0.08	6.1-7.8	Low----------	0.17		
	26-60	0-2	1.45-1.65	6.0-20	0.04-0.08	6.6-8.4	Low----------	0.17		
KgA, KgB--------- Kingsbury	0-12	30-50	1.35-1.55	0.06-0.2	0.12-0.22	5.1-7.8	Moderate-----	0.49	3	3-9
	12-28	60-90	1.40-1.75	<0.06	0.12-0.13	5.1-7.8	High---------	0.28		
	28-60	60-90	1.40-1.50	<0.06	0.12-0.14	7.9-8.4	High---------	0.28		
Kh*: Kingsbury-------	0-12	30-50	1.35-1.55	0.06-0.2	0.12-0.22	5.1-7.8	Moderate-----	0.49	3	3-9
	12-28	60-90	1.40-1.75	<0.06	0.12-0.13	5.1-7.8	High---------	0.28		
	28-60	60-90	1.40-1.50	<0.06	0.12-0.14	7.9-8.4	High---------	0.28		
Livingston------	0-6	35-90	0.50-1.30	0.2-0.6	0.16-0.20	5.1-7.3	High---------	0.49	3	10-20
	6-30	60-90	1.30-1.65	<0.2	0.12-0.14	5.1-7.3	High---------	0.49		
	30-60	60-90	1.40-1.60	<0.2	0.12-0.14	7.4-8.4	High---------	0.49		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
LaB*, LaC*:										
Lagross----------	0-8	6-18	1.10-1.40	2.0-6.0	0.10-0.17	4.5-6.0	Low----------	0.24	3	3-6
	8-14	6-18	1.25-1.55	2.0-6.0	0.10-0.17	4.5-6.0	Low----------	0.24		
	14-36	6-18	1.25-1.55	2.0-6.0	0.07-0.11	4.5-6.0	Low----------	0.17		
	36-60	6-18	1.45-1.65	2.0-6.0	0.05-0.09	5.1-6.5	Low----------	0.17		
Haights----------	0-6	10-18	1.10-1.40	0.6-2.0	0.13-0.21	4.5-6.0	Low----------	0.32	3	3-7
	6-27	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low----------	0.24		
	27-34	10-18	1.25-1.55	0.6-2.0	0.09-0.20	4.5-6.0	Low----------	0.24		
	34-60	5-10	1.45-1.65	0.6-2.0	0.09-0.20	5.1-6.5	Low----------	0.24		
Lb--------------- Lamson	0-5	5-18	1.10-1.40	0.6-6.0	0.15-0.22	5.6-7.8	Low----------	0.28	5	3-10
	5-30	5-18	1.25-1.55	0.6-6.0	0.12-0.17	6.1-8.4	Low----------	0.20		
	30-60	1-10	1.45-1.65	0.6-6.0	0.02-0.04	6.1-8.4	Low----------	0.20		
Lc--------------- Livingston	0-6	35-90	0.50-1.30	0.2-0.6	0.16-0.20	5.1-7.3	High---------	0.49	3	10-20
	6-30	60-90	1.30-1.65	<0.2	0.12-0.14	5.1-7.3	High---------	0.49		
	30-60	60-90	1.40-1.60	<0.2	0.12-0.14	7.4-8.4	High---------	0.49		
Ld--------------- Livingston	0-4	35-90	1.10-1.60	0.2-0.6	0.14-0.18	5.1-7.3	High---------	0.49	3	5-20
	4-30	60-90	1.30-1.65	<0.2	0.12-0.14	5.1-7.3	High---------	0.49		
	30-60	60-90	1.40-1.60	<0.2	0.12-0.14	7.4-8.4	High---------	0.49		
LoA, LoB, LoC, LoD------------- Lowville	0-6	5-18	1.00-1.30	0.6-2.0	0.17-0.21	4.5-6.0	Low----------	0.49	3	3-6
	6-24	5-18	1.20-1.50	0.6-2.0	0.16-0.20	4.5-6.0	Low----------	0.64		
	24-60	5-18	1.60-1.80	0.6-2.0	0.07-0.15	5.1-7.8	Low----------	0.24		
	60-80	5-18	1.60-1.80	0.06-0.2	0.07-0.15	5.6-8.4	Low----------	0.24		
Ma--------------- Madalin	0-14	25-55	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.8	Moderate-----	0.37	5	4-10
	14-30	27-60	1.20-1.40	0.06-0.2	0.12-0.13	5.6-7.8	Moderate-----	0.28		
	30-60	40-60	1.15-1.40	<0.2	0.12-0.13	7.4-8.4	Moderate-----	0.28		
MdA, MdB, MdC, MdD------------- Madrid	0-8	8-22	1.10-1.40	0.6-2.0	0.11-0.19	5.1-6.5	Low----------	0.32	3	2-6
	8-32	8-18	1.30-1.60	0.6-2.0	0.09-0.19	5.1-7.8	Low----------	0.24		
	32-38	8-18	1.30-1.60	0.2-2.0	0.09-0.19	5.6-8.4	Low----------	0.24		
	38-60	5-15	1.50-1.70	0.2-0.6	0.08-0.14	6.6-8.4	Low----------	0.24		
MnB, MnC--------- Manlius	0-7	6-18	1.10-1.40	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.28	3	1-5
	7-16	6-18	1.20-1.50	0.6-2.0	0.08-0.12	3.6-5.5	Low----------	0.20		
	16-36	6-18	1.70-1.95	0.6-2.0	0.03-0.09	4.5-6.5	Low----------	0.20		
	36-40	---	---	---	---	---	-------------	----		
MoA, MoB--------- Massena	0-9	8-22	1.10-1.40	0.6-2.0	0.14-0.20	5.6-7.3	Low----------	0.28	3	3-8
	9-27	7-18	1.20-1.50	0.06-0.6	0.08-0.15	5.6-7.3	Low----------	0.20		
	27-60	7-18	1.70-1.95	0.06-0.6	0.06-0.14	6.6-8.4	Low----------	0.20		
MpB-------------- Massena	0-9	8-22	1.10-1.40	0.6-2.0	0.08-0.15	5.6-7.3	Low----------	0.20	3	---
	9-27	7-18	1.20-1.50	0.06-0.6	0.08-0.15	5.6-7.3	Low----------	0.20		
	27-60	7-18	1.70-1.95	0.06-0.6	0.06-0.14	6.6-8.4	Low----------	0.20		
MtB-------------- Millsite	0-6	3-8	1.00-1.25	0.6-6.0	0.12-0.16	4.5-6.5	Low----------	0.24	2	2-5
	6-28	1-8	1.45-1.70	0.6-6.0	0.08-0.15	4.5-6.5	Low----------	0.20		
	28	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
MuC*, MuE*:										
Millsite--------	0-6	3-8	1.00-1.25	0.6-6.0	0.12-0.16	4.5-6.5	Low----------	0.24	2	2-5
	6-28	1-8	1.45-1.70	0.6-6.0	0.08-0.15	4.5-6.5	Low----------	0.20		
	28	---	---	---	---	---	-------------	----		
Rock outcrop.										
Mv--------------- Minoa	0-8	5-18	1.20-1.50	0.6-2.0	0.16-0.20	5.1-7.3	Low----------	0.28	4	3-6
	8-27	5-18	1.20-1.50	0.6-2.0	0.13-0.20	5.1-7.3	Low----------	0.32		
	27-60	3-15	1.20-1.50	0.6-6.0	0.07-0.20	5.6-8.4	Low----------	0.24		
MwA, MwB--------- Muskellunge	0-12	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	12-26	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	26-30	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.6-8.4	Moderate-----	0.28		
	30-60	35-60	1.15-1.65	0.06-0.2	0.12-0.15	6.6-8.4	Moderate-----	0.28		
MxC*:										
Muskellunge-----	0-12	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	12-26	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	26-30	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.6-8.4	Moderate-----	0.28		
	30-60	35-60	1.15-1.65	0.06-0.2	0.12-0.15	6.6-8.4	Moderate-----	0.28		
Millsite--------	0-6	3-8	1.00-1.25	0.6-6.0	0.12-0.16	4.5-6.5	Low----------	0.24	2	2-5
	6-28	1-8	1.45-1.70	0.6-6.0	0.08-0.15	4.5-6.5	Low----------	0.20		
	28	---	---	---	---	---	-------------	----		
Rock outcrop.										
NaC-------------- Nassau	0-5	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low----------	0.20	2	3-5
	5-14	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low----------	0.20		
	14	---	---	---	---	---	-------------	----		
NbF*:										
Nassau----------	0-5	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low----------	0.20	2	3-5
	5-14	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low----------	0.20		
	14	---	---	---	---	---	-------------	----		
Manlius---------	0-7	6-18	1.10-1.40	0.6-2.0	0.10-0.18	3.6-5.5	Low----------	0.28	3	1-5
	7-16	6-18	1.20-1.50	0.6-2.0	0.08-0.12	3.6-5.5	Low----------	0.20		
	16-36	6-18	1.70-1.95	0.6-2.0	0.03-0.09	4.5-6.5	Low----------	0.20		
	36	---	---	---	---	---	-------------	----		
NlA, NlB, NlC, NlD------------- Nellis	0-9	5-18	1.30-1.60	0.6-2.0	0.13-0.20	5.6-7.3	Low----------	0.32	3	2-6
	9-21	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	Low----------	0.24		
	21-72	3-18	1.70-1.95	0.2-2.0	0.07-0.19	7.4-8.4	Low----------	0.24		
NmE*:										
Nellis----------	0-9	5-18	1.30-1.60	0.6-2.0	0.13-0.20	5.6-7.3	Low----------	0.32	3	2-6
	9-21	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	Low----------	0.24		
	21-72	3-18	1.70-1.95	0.2-2.0	0.07-0.19	7.4-8.4	Low----------	0.24		
Madrid----------	0-8	8-22	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low----------	0.32	3	2-6
	8-32	8-18	1.30-1.60	0.6-2.0	0.09-0.19	5.1-7.3	Low----------	0.24		
	32-38	8-18	1.30-1.60	0.2-2.0	0.09-0.19	5.6-7.3	Low----------	0.24		
	38-60	5-15	1.50-1.70	0.2-0.6	0.08-0.14	6.6-8.4	Low----------	0.24		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Nn--------------- Newstead	0-8	5-18	1.10-1.40	0.6-2.0	0.12-0.18	5.6-7.8	Low----------	0.28	3	3-10
	8-22	5-18	1.20-1.50	0.6-2.0	0.07-0.17	6.1-8.4	Low----------	0.20		
	22-30	5-18	1.20-1.50	0.6-2.0	0.04-0.15	6.6-8.4	Low----------	0.20		
	30	---	---	---	---	---	-------------	----		
NoA, NoB--------- Niagara	0-13	15-25	1.20-1.50	0.6-2.0	0.17-0.22	5.1-7.3	Low----------	0.49	3	2-6
	13-35	18-35	1.20-1.50	0.2-0.6	0.16-0.20	5.6-7.8	Low----------	0.49		
	35-75	5-35	1.20-1.50	0.2-0.6	0.12-0.20	6.6-8.4	Low----------	0.64		
NpB-------------- Niagara	0-13	15-25	1.20-1.50	0.6-2.0	0.17-0.22	5.1-7.3	Low----------	0.49	3	2-6
	13-29	18-35	1.20-1.50	0.2-0.6	0.16-0.20	5.6-7.8	Low----------	0.49		
	29-48	5-35	1.20-1.50	0.2-0.6	0.12-0.20	6.6-8.4	Low----------	0.64		
	48	---	---	---	---	---	-------------	----		
Pa--------------- Palms	0-45	---	0.25-0.45	0.2-6.0	0.35-0.45	5.1-7.8	-------------	----	2	>75
	45-65	7-35	1.45-1.75	0.2-2.0	0.14-0.22	6.1-8.4	Low----------	----		
PhA, PhB--------- Phelps	0-7	10-28	1.10-1.40	0.6-2.0	0.10-0.16	5.6-7.3	Low----------	0.24	3	3-6
	7-30	18-35	1.25-1.55	0.6-2.0	0.08-0.13	5.6-7.8	Low----------	0.24		
	30-36	10-35	1.25-1.55	0.6-2.0	0.07-0.13	7.4-8.4	Low----------	0.24		
	36-60	1-5	1.45-1.65	2.0-20	0.01-0.04	7.4-8.4	Low----------	0.17		
PkB*:										
Pinckney--------	0-7	10-27	1.10-1.40	0.6-2.0	0.14-0.21	4.5-6.0	Low----------	0.32	3	3-8
	7-22	18-27	1.20-1.50	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.24		
	22-64	10-27	1.60-2.00	<0.2	0.02-0.06	5.1-6.5	Low----------	0.24		
	64-72	10-27	1.60-1.95	0.06-0.6	0.07-0.14	5.1-7.3	Low----------	0.24		
Ensley----------	0-8	10-18	1.30-1.60	2.0-6.0	0.17-0.22	6.1-7.8	Low----------	0.32	5	4-7
	8-26	10-25	1.30-1.70	0.6-2.0	0.10-0.18	6.6-8.4	Moderate-----	0.20		
	26-60	8-18	1.45-1.70	2.0-6.0	0.08-0.12	7.4-8.4	Low----------	0.20		
Pm*, Pn*. Pits										
PoB, PoC--------- Plainfield	0-8	2-5	1.50-1.65	6.0-20	0.04-0.09	5.1-7.3	Low----------	0.15	5	.5-2
	8-28	0-4	1.50-1.65	6.0-20	0.04-0.07	4.5-6.5	Low----------	0.15		
	28-65	0-4	1.50-1.70	6.0-20	0.03-0.07	4.5-6.5	Low----------	0.15		
PpD*:										
Plainfield------	0-8	2-5	1.50-1.65	6.0-20	0.04-0.09	5.1-7.3	Low----------	0.15	5	.5-2
	8-28	0-4	1.50-1.65	6.0-20	0.04-0.07	4.5-6.5	Low----------	0.15		
	28-65	0-4	1.50-1.70	6.0-20	0.03-0.07	4.5-6.5	Low----------	0.15		
Windsor---------	0-5	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-6.0	Low----------	0.17	5	2-4
	5-28	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-6.0	Low----------	0.17		
	28-60	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-6.5	Low----------	0.10		
Ps--------------- Pootatuck	0-8	2-6	1.10-1.35	0.6-6.0	0.11-0.21	5.1-6.5	Low----------	0.20	5	2-6
	8-24	1-6	1.20-1.45	0.6-6.0	0.09-0.18	5.1-6.5	Low----------	0.20		
	24-60	0-2	1.25-1.50	>6.0	0.01-0.10	5.1-6.5	Low----------	0.17		
QeB*:										
Quetico---------	0-9	10-25	1.40-1.60	0.6-2.0	0.20-0.22	4.5-5.5	Low----------	0.32	1	1-5
	9	---	---	---	---	---	-------------	----		
Rock outcrop.										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
RhA, RhB--------- Rhinebeck	0-12	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	12-26	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	26-60	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.1-8.4	Moderate-----	0.28		
RkC*: Rhinebeck--------	0-12	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	12-26	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	26-60	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.1-8.4	Moderate-----	0.28		
Chatfield--------	0-4	7-18	1.10-1.40	0.6-6.0	0.12-0.16	4.5-6.0	Low----------	0.24	3	2-6
	4-30	7-18	1.20-1.50	0.6-6.0	0.08-0.15	4.5-6.0	Low----------	0.20		
	30	---	---	---	---	---	-------------	----		
RkC*: Rock outcrop.										
Rn--------------- Rhinebeck Variant	0-8	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.8	Moderate-----	0.49	3	3-7
	8-19	15-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	19-33	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	33-60	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.1-8.4	Moderate-----	0.28		
Ru--------------- Ruse	0-6	10-20	1.20-1.60	0.6-6.0	0.12-0.22	5.6-6.5	Low----------	0.24	2	3-7
	6-16	10-25	1.50-1.70	0.6-6.0	0.10-0.20	6.1-7.8	Low----------	0.24		
	16	---	---	---	---	---	-------------	----		
Sa*: Saprists.										
Aquents.										
Sc--------------- Scarboro	0-12	1-7	0.70-1.00	>6.0	0.10-0.23	4.5-6.0	Low----------	0.17	5	6-15
	12-24	1-5	1.15-1.35	>6.0	0.04-0.13	4.5-6.0	Low----------	0.17		
	24-60	0-2	1.35-1.55	>6.0	0.01-0.13	4.5-6.0	Low----------	0.10		
SdA, SdB--------- Scriba	0-17	1-18	1.10-1.40	0.6-2.0	0.08-0.16	3.6-6.5	Low----------	0.20	3	3-7
	17-27	1-18	1.70-2.00	0.06-0.2	0.-0.04	5.1-7.3	Low----------	0.20		
	27-60	1-18	1.65-1.95	0.06-0.2	0.-0.04	5.1-8.4	Low----------	0.20		
Sh--------------- Shaker	0-12	2-8	1.00-1.25	2.0-6.0	0.14-0.24	5.1-6.5	Low----------	0.24	3	2-10
	12-24	2-8	1.35-1.60	2.0-6.0	0.13-0.22	5.1-6.5	Low----------	0.24		
	24-60	35-60	1.55-1.80	<0.2	0.12-0.18	5.6-7.3	Low----------	0.49		
SoB, SoC, SoD---- Sodus	0-8	5-18	1.10-1.40	0.6-2.0	0.10-0.18	5.1-7.3	Low----------	0.20	3	2-7
	8-20	5-18	1.20-1.50	0.6-2.0	0.10-0.15	5.1-6.0	Low----------	0.20		
	20-60	5-18	1.70-2.00	<0.2	0.02-0.04	5.6-7.8	Low----------	0.20		
Su--------------- Sun	0-8	5-18	1.10-1.40	0.6-2.0	0.12-0.21	5.1-7.3	Low----------	0.28	5	3-15
	8-22	5-18	1.20-1.50	<0.2	0.08-0.15	5.6-7.3	Low----------	0.20		
	22-60	5-18	1.70-1.95	<0.2	0.06-0.12	6.6-8.4	Low----------	0.20		
Sv--------------- Sun	0-8	5-18	1.10-1.40	0.6-2.0	0.09-0.17	5.1-7.3	Low----------	0.20	5	3-15
	8-22	5-18	1.20-1.50	<0.2	0.08-0.15	5.6-7.3	Low----------	0.20		
	22-60	5-18	1.70-1.95	<0.2	0.06-0.12	6.6-8.4	Low----------	0.20		
Te--------------- Teel	0-8	8-18	1.15-1.40	0.6-2.0	0.18-0.21	6.1-7.3	Low----------	0.49	5	2-6
	8-40	5-18	1.15-1.45	0.6-2.0	0.17-0.19	6.1-7.3	Low----------	0.49		
	40-60	3-10	1.25-1.55	0.6-2.0	0.12-0.12	6.1-7.8	Low----------	0.49		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ua, Ub. Udorthents										
Uc*: Udorthents.										
Udifluvents.										
Ur*. Urban land										
VeB, VeC--------- Vergennes	0-8	25-90	1.25-1.55	<0.2	0.16-0.19	5.1-7.3	Moderate-----	0.49	3-2	2-6
	8-29	60-90	1.10-1.40	<0.06	0.15-0.18	5.1-7.3	Moderate-----	0.49		
	29-72	60-90	1.20-1.50	<0.06	0.15-0.18	7.9-8.4	Moderate-----	0.49		
Wa--------------- Wareham	0-5	1-3	1.00-1.20	6.0-20	0.06-0.15	3.6-6.5	Low----------	0.17	5	2-5
	5-24	0-3	1.30-1.50	6.0-20	0.03-0.13	3.6-6.5	Low----------	0.17		
	24-60	0-3	1.40-1.60	6.0-20	0.01-0.13	3.6-6.5	Low----------	0.17		
We--------------- Wayland	0-6	15-35	1.05-1.40	0.2-2.0	0.17-0.22	5.1-7.8	Low----------	0.43	5	4-8
	6-60	18-35	1.10-1.60	0.06-0.2	0.16-0.20	5.6-8.4	Low----------	0.43		
Wh--------------- Whately	0-2	---	0.55-0.75	2.0-20	0.25-0.35	5.6-6.5	-------------	----	---	>50
	2-18	5-10	1.15-1.45	2.0-6.0	0.11-0.18	6.1-7.3	Low----------	0.28		
	18-60	35-55	1.50-1.80	<0.2	0.11-0.16	6.1-7.3	Moderate-----	0.49		
Wk--------------- Willette	0-42	---	0.25-0.45	0.2-6.0	0.35-0.45	6.1-7.8	-------------	----	2	>60
	42-60	40-60	1.40-1.65	0.06-0.2	0.12-0.16	7.4-8.4	High---------	----		
WmB-------------- Williamson	0-8	4-18	1.10-1.40	0.6-2.0	0.18-0.20	4.5-6.0	Low----------	0.49	3	3-6
	8-18	4-18	1.10-1.40	0.6-2.0	0.18-0.20	4.5-6.0	Low----------	0.64		
	18-42	4-18	1.30-1.60	<0.2	0.10-0.14	4.5-6.0	Low----------	0.64		
	42-60	4-18	1.30-1.60	<0.2	0.10-0.14	4.5-6.0	Low----------	0.64		
WnB, WnC--------- Wilpoint	0-9	27-60	0.90-1.25	<0.2	0.14-0.19	5.6-7.3	High---------	0.49	3	2-8
	9-22	60-85	1.20-1.40	<0.2	0.12-0.14	5.6-7.3	High---------	0.28		
	22-29	40-85	1.30-1.50	<0.2	0.12-0.14	6.6-8.4	High---------	0.28		
	29	---	---	---	---	---	-------------	----		
WoB, WoC--------- Windsor	0-5	1-3	1.00-1.20	>6.0	0.08-0.12	4.5-6.0	Low----------	0.17	5	2-4
	5-28	0-3	1.30-1.55	>6.0	0.02-0.12	4.5-6.0	Low----------	0.17		
	28-60	0-2	1.40-1.65	>6.0	0.01-0.08	4.5-6.5	Low----------	0.10		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "frequent," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
AgA, AgB---------- Agawam	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
AhA, AhB---------- Allis	D	None--------	---	---	0-1.0	Perched	Nov-Jun	20-40	Soft	Moderate	High-----	High.
AlA, AlB, AlC, AlD, AlE--------- Alton	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
AmA, AmB---------- Amenia	B	None--------	---	---	1.5-3.0	Perched	Nov-May	>60	---	High-----	Moderate	Low.
AnA, AnB---------- Angola	C	None--------	---	---	0.5-1.5	Perched	Dec-May	20-40	Soft	High-----	High-----	Low.
ArB, ArC---------- Arkport	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
Be*. Beaches												
BfF--------------- Benson	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	Low.
BgB*:												
Benson------------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	Low.
Galoo-------------	C/D	None--------	---	---	>6.0	---	---	2-10	Hard	Moderate	Low------	Low.
BhB, BhC, BhD, BhF, BkC--------- Bice	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
BlB*, BlC*:												
Bice--------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Haights-----------	B	None--------	---	---	2.0-3.0	Apparent	Feb-Apr	>60	---	Moderate	Moderate	Low.
BmB*:												
Bice--------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Pinckney----------	C	None--------	---	---	1.5-2.0	Perched	Feb-May	>60	---	Moderate	Low------	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
BmC*, BmD*:												
Bice-------------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Pinckney---------	C	None---------	---	---	1.5-2.0	---	Feb-May	>60	---	Moderate	Low------	Moderate.
BnA, BnB, BnC----- Blasdell	A	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
BoA, BoB---------- Bombay	B	None---------	---	---	1.5-2.0	Perched	Mar-May	>60	---	Moderate	Moderate	Low.
BpB, BpC---------- Bonaparte	A	None---------	---	---	>6.0	---	---	>60	---	Low------	Low------	Moderate.
Bt---------------- Boots	A/D	Occasional	Long------	Nov-May	+1-1.0	Apparent	Nov-Aug	>60	---	High-----	Moderate	Low.
Ca, Cb------------ Canandaigua	D	None---------	---	---	+1-1.0	Apparent	Nov-May	>60	---	High-----	High-----	Low.
Cc---------------- Carbondale	A/D	None---------	---	---	+1-1.0	Apparent	Sep-May	>60	---	High-----	High-----	Moderate.
Cd---------------- Carlisle	A/D	None---------	---	---	+.5-1.0	Apparent	Sep-Jun	>60	---	High-----	High-----	Low.
ChB--------------- Chatfield	B	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
CkC*, CkE*:												
Chatfield--------	B	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
Rock outcrop.												
ClA, ClB---------- Chaumont	D	None---------	---	---	0.5-1.5	Perched	Dec-May	20-40	Hard	High-----	High-----	Low.
CmA, CmB---------- Claverack	C	None---------	---	---	1.5-2.0	Perched	Nov-May	>60	---	Moderate	Low------	Moderate.
CnB, CnC, CnC3---- Collamer	C	None---------	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High-----	Moderate	Low.
CoB--------------- Collamer	C	None---------	---	---	1.5-2.0	Apparent	Mar-May	40-60	Hard	High-----	Moderate	Low.
Cp---------------- Covington	D	None---------	---	---	0.5-1.0	Apparent	Oct-May	>60	---	Moderate	High-----	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
DcB, DcC, DcD----- Danley	C	None--------	---	---	1.5-2.0	Perched	Mar-May	>60	---	High-----	High-----	Low.
DdA, DdB, DdC----- Darien	C	None--------	---	---	0.5-1.5	Perched	Dec-May	>60	---	High-----	High-----	Low.
DeB--------------- Deerfield	B	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Low------	High.
Dp*. Dumps												
ElA, ElB---------- Elmridge	C	None--------	---	---	1.5-3.0	Perched	Nov-May	>60	---	High-----	Moderate	Moderate.
Em---------------- Ensley	B/D	None--------	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
En---------------- Ensley	B/D	None--------	---	---	+1-0.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
FaB--------------- Farmington	C	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	Moderate.
Fu*: Fluvaquents.												
Udifluvents.												
GaA, GaB---------- Galen	B	None--------	---	---	1.5-2.0	Apparent	Mar-May	>60	---	Moderate	Moderate	Low.
GbB*: Galoo------------	C/D	None--------	---	---	>6.0	---	---	2-10	Hard	Moderate	Low------	Low.
Rock outcrop.												
GcB*: Galoo------------	C/D	None--------	---	---	>6.0	---	---	2-10	Hard	Moderate	Moderate	High.
Rock outcrop.												
GlA, GlB, GlC, GmC------------- Galway	B	None--------	---	---	1.5-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Low------	Low.
Gr---------------- Granby	A/D	None--------	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	Moderate	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
GtA, GtB, GtC, GtD, GtE Groton	A	None	---	---	>6.0	---	---	>60	---	Low	Low	Low.
GuB Groton Variant	A	None	---	---	>6.0	---	---	20-40	Hard	Low	Low	Low.
Gv Guffin	D	None	---	---	0-0.5	Apparent	Dec-May	20-40	Hard	High	High	Low.
Gw Gulf	B/D	None	---	---	0-0.5	Apparent	Nov-Jun	>60	---	High	High	Low.
HaB*:												
Haights	B	None	---	---	2.0-3.0	Apparent	Feb-Apr	>60	---	Moderate	Moderate	Low.
Gulf	B/D	None	---	---	0-0.5	Apparent	Nov-Jun	>60	---	High	High	Low.
Hb Halsey	C/D	None	---	---	0-0.5	Apparent	Sep-Jun	>60	---	High	High	Low.
Hc Hamlin	B	Occasional	Brief	Nov-May	3.0-6.0	Apparent	Nov-May	>60	---	High	Low	Low.
HeB, HeC Heuvelton	C	None	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High	High	Low.
HmB*:												
Heuvelton	C	None	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High	High	Low.
Millsite	B	None	---	---	>6.0	---	---	20-40	Hard	Low	Low	High.
Rock outcrop.												
HnB Hinckley	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
HoB*, HoE*:												
Hinckley	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Hoosic	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
HpB*:												
Hollis	C/D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Galoo	C/D	None	---	---	>6.0	---	---	2-10	Hard	Moderate	Moderate	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
HrB*:												
Hollis	C/D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
Rock outcrop.												
HuB, HuC Hudson	C	None	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High	High	Low.
HvB*:												
Hudson	C	None	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High	High	Low.
Chatfield	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
Rock outcrop.												
HyE3*:												
Hudson	C	None	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High	High	Low.
Vergennes	D	None	---	---	1.0-3.0	Apparent	Dec-May	>60	---	Moderate	High	Low.
InB*:												
Insula	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Low	Moderate.
Quetico	D	None	---	---	>6.0	---	---	4-8	Hard	Low	Low	Moderate.
IoB*:												
Insula	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Low	Moderate.
Rock outcrop.												
IrB, IrC Ira	C	None	---	---	1.5-2.0	Perched	Feb-Mar	>60	---	Moderate	Moderate	High.
Ju Junius	C	None	---	---	0.5-1.5	Apparent	Dec-May	>60	---	Moderate	High	Moderate.
KgA, KgB Kingsbury	D	None	---	---	0.5-1.5	Perched	Dec-May	>60	---	High	High	Moderate.
Kh*:												
Kingsbury	D	None	---	---	0.5-1.5	Perched	Dec-May	>60	---	High	High	Moderate.
Livingston	D	None	---	---	0-1.0	Apparent	Sep-Jul	>60	---	High	High	Low.
LaB*, LaC*:												
Lagross	A	None	---	---	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Haights	B	None	---	---	2.0-3.0	Apparent	Feb-Apr	>60	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
Lb----------------- Lamson	B/D	None---------	---	---	+1-0.5	Apparent	Dec-May	>60	---	High-----	High-----	Low.
Lc----------------- Livingston	D	None---------	---	---	0-1.0	Apparent	Sep-Jul	>60	---	High-----	High-----	Low.
Ld----------------- Livingston	D	Frequent----	Long------	Nov-Apr	0-1.0	Apparent	Sep-Jul	>60	---	High-----	High-----	Low.
LoA, LoB, LoC, LoD-------------- Lowville	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
Ma----------------- Madalin	D	None---------	---	---	0-0.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
MdA, MdB, MdC, MdD-------------- Madrid	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
MnB, MnC---------- Manlius	C	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
MoA, MoB, MpB----- Massena	C	None---------	---	---	0.5-1.5	Apparent	Feb-Apr	>60	---	High-----	Moderate	Moderate.
MtB---------------- Millsite	B	None---------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	High.
MuC*, MuE*: Millsite----------	B	None---------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	High.
Rock outcrop.												
Mv----------------- Minoa	C	None---------	---	---	0.5-1.5	Apparent	Feb-Apr	>60	---	High-----	Moderate	Moderate.
MwA, MwB---------- Muskellunge	D	None---------	---	---	0.5-1.5	Perched	Jan-May	>60	---	High-----	High-----	Low.
MxC*: Muskellunge-------	D	None---------	---	---	0.5-1.5	Perched	Jan-May	>60	---	High-----	High-----	Low.
Millsite----------	B	None---------	---	---	>6.0	---	---	20-40	Hard	Low------	Low------	High.
Rock outcrop.												
NaC---------------- Nassau	C	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
NbF*:												
Nassau----------	C	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
Manlius----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
NlA, NlB, NlC, NlD-------------- Nellis	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Low.
NmE*:												
Nellis----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Low.
Madrid----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
Nn---------------- Newstead	C	None--------	---	---	0.5-1.0	Perched	Dec-May	20-40	Hard	High-----	High-----	Low.
NoA, NoB---------- Niagara	C	None--------	---	---	0.5-1.5	Apparent	Dec-May	>60	---	High-----	High-----	Low.
NpB--------------- Niagara	C	None--------	---	---	0.5-1.5	Apparent	Dec-May	40-60	Hard	High-----	High-----	Low.
Pa---------------- Palms	A/D	None--------	---	---	+1-1.0	Apparent	Nov-May	>60	---	High-----	High-----	Moderate.
PhA, PhB---------- Phelps	B	None--------	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High-----	Moderate	Low.
PkB*:												
Pinckney---------	C	None--------	---	---	1.5-2.0	Perched	Feb-May	>60	---	Moderate	Low------	Moderate.
Ensley-----------	B/D	None--------	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
Pm*, Pn*. Pits												
PoB, PoC---------- Plainfield	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
PpD*:												
Plainfield-------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Windsor----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.
Ps---------------- Pootatuck	B	Frequent----	Brief-----	Nov-Apr	1.5-2.5	Apparent	Nov-Apr	>60	---	Moderate	Moderate	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
QeB*:												
Quetico----------	D	None--------	---	---	>6.0	---	---	4-8	Hard	Low------	Low------	Moderate.
Rock outcrop.												
RhA, RhB---------- Rhinebeck	D	None--------	---	---	0.5-1.5	Perched	Jan-May	>60	---	High-----	High-----	Low.
RkC*:												
Rhinebeck--------	D	None--------	---	---	0.5-1.5	Perched	Jan-May	>60	---	High-----	High-----	Low.
Chatfield--------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
Rock outcrop.												
Rn---------------- Rhinebeck Variant	D	Occasional	Long------	Nov-May	0.5-1.5	Perched	Nov-May	>60	---	High-----	High-----	Low.
Ru---------------- Ruse	D	None--------	---	---	+1-1.0	Apparent	Nov-May	10-20	Hard	High-----	High-----	Low.
Sa*:												
Saprists.												
Aquents.												
Sc---------------- Scarboro	D	None--------	---	---	+1-1.0	Apparent	Jan-Dec	>60	---	High-----	High-----	High.
SdA, SdB---------- Scriba	C	None--------	---	---	0.5-1.5	Perched	Feb-Mar	>60	---	High-----	Moderate	Moderate.
Sh---------------- Shaker	C	None--------	---	---	0-1.5	Apparent	Nov-May	>60	---	High-----	Moderate	Moderate.
SoB, SoC, SoD----- Sodus	C	None--------	---	---	2.0-3.0	Perched	Feb-May	>60	---	Moderate	Low------	Moderate.
Su, Sv------------ Sun	D	None--------	---	---	+1-0.5	Apparent	Nov-Apr	>60	---	High-----	High-----	Moderate.
Te---------------- Teel	B	Occasional	Brief-----	Nov-May	1.5-2.0	Apparent	Jan-May	>60	---	High-----	Moderate	Low.
Ua, Ub. Udorthents												

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
Uc*:												
Udorthents.												
Udifluvents.												
Ur*. Urban land												
VeB, VeC---------- Vergennes	D	None--------	---	---	1.0-3.0	Apparent	Dec-May	>60	---	Moderate	High-----	Low.
Wa---------------- Wareham	C	None--------	---	---	0-1.5	Apparent	Sep-Jun	>60	---	Moderate	Moderate	High.
We---------------- Wayland	C/D	Frequent----	Brief to long.	Nov-Jun	0-0.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
Wh---------------- Whately	D	None--------	---	---	+1-1.0	Apparent	Oct-Aug	>60	---	High-----	High-----	Moderate.
Wk---------------- Willette	A/D	None--------	---	---	+1-1.0	Perched	Nov-May	>60	---	High-----	High-----	Low.
WmB--------------- Williamson	C	None--------	---	---	1.5-2.0	Perched	Feb-Apr	>60	---	High-----	Moderate	Moderate.
WnB, WnC---------- Wilpoint	D	None--------	---	---	1.5-2.0	Perched	Dec-May	20-40	Hard	High-----	High-----	Low.
WoB, WoC---------- Windsor	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Low------	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Agawam	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Allis	Fine, illitic, acid, mesic Aeric Haplaquepts
Alton	Loamy-skeletal, mixed, mesic Dystric Eutrochrepts
Amenia	Coarse-loamy, mixed, mesic Aquic Eutrochrepts
Angola	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Aquents	Aquents
Arkport	Coarse-loamy, mixed, mesic Psammentic Hapludalfs
Benson	Loamy-skeletal, mixed, mesic Lithic Eutrochrepts
Bice	Coarse-loamy, mixed, frigid Typic Dystrochrepts
Blasdell	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Bombay	Coarse-loamy, mixed, mesic Glossoboric Hapludalfs
Bonaparte	Sandy-skeletal, mixed, mesic Typic Udorthents
Boots	Euic, mesic Typic Medihemists
Canandaigua	Fine-silty, mixed, nonacid, mesic Mollic Haplaquepts
Carbondale	Euic Hemic Borosaprists
Carlisle	Euic, mesic Typic Medisaprists
Chatfield	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Chaumont	Very fine, mixed, mesic Aeric Ochraqualfs
*Claverack	Sandy over clayey, mixed, nonacid, mesic Aquic Udorthents
Collamer	Fine-silty, mixed, mesic Glossaquic Hapludalfs
Covington	Very fine, illitic, mesic Mollic Ochraqualfs
Danley	Fine-loamy, mixed, mesic Glossaquic Hapludalfs
Darien	Fine-loamy, mixed, mesic Aeric Ochraqualfs
*Deerfield	Mixed, mesic Aquic Udipsamments
Elmridge	Coarse-loamy over clayey, mixed, mesic Aquic Dystric Eutrochrepts
Ensley	Coarse-loamy, mixed, nonacid, frigid Aeric Haplaquepts
Farmington	Loamy, mixed, mesic Lithic Eutrochrepts
Fluvaquents	Fluvaquents
Galen	Coarse-loamy, mixed, mesic Psammentic Hapludalfs
Galoo	Loamy, mixed, nonacid, mesic Lithic Udorthents
Galway	Coarse-loamy, mixed, mesic Typic Eutrochrepts
Granby	Sandy, mixed, mesic Typic Haplaquolls
Groton	Sandy-skeletal, mixed, mesic Typic Eutrochrepts
Groton Variant	Sandy-skeletal, mixed, mesic, Typic Eutrochrepts
Guffin	Very fine, mixed, nonacid, mesic Mollic Haplaquepts
Gulf	Fine-loamy, mixed, nonacid, frigid Aeric Haplaquepts
Haights	Coarse-loamy, mixed, frigid Typic Dystrochrepts
*Halsey	Coarse-loamy over sandy or sandy-skeletal, mixed, nonacid, mesic Mollic Haplaquepts
Hamlin	Coarse-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Heuvelton	Fine, mixed Aquic Glossoboralfs
Hinckley	Sandy-skeletal, mixed, mesic Typic Udorthents
Hollis	Loamy, mixed, mesic Lithic Dystrochrepts
Hoosic	Sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hudson	Fine, illitic, mesic Glossaquic Hapludalfs
Insula	Loamy, mixed, frigid Lithic Dystrochrepts
Ira	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Junius	Mixed, mesic Typic Psammaquents
Kingsbury	Very fine, illitic, mesic Aeric Ochraqualfs
Lagross	Loamy-skeletal, mixed, frigid Typic Dystrochrepts
Lamson	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Livingston	Very fine, illitic, nonacid, mesic Mollic Haplaquepts
Lowville	Coarse-loamy, mixed, mesic Dystric Eutrochrepts
Madalin	Fine, illitic, mesic Mollic Ochraqualfs
Madrid	Coarse-loamy, mixed, mesic Glossoboric Hapludalfs
Manlius	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Massena	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Millsite	Coarse-loamy, mixed, frigid Typic Dystrochrepts
Minoa	Coarse-loamy, mixed, mesic Aquic Dystric Eutrochrepts
Muskellunge	Fine, mixed, frigid Aeric Ochraqualfs

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Nassau	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Nellis	Coarse-loamy, mixed, mesic Typic Eutrochrepts
Newstead	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Niagara	Fine-silty, mixed, mesic Aeric Ochraqualfs
Palms	Loamy, mixed, euic, mesic Terric Medisaprists
*Phelps	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Glossaquic Hapludalfs
Pinckney	Coarse-loamy, mixed, frigid Typic Fragiochrepts
Plainfield	Mixed, mesic Typic Udipsamments
Pootatuck	Coarse-loamy, mixed, mesic Fluvaquentic Dystrochrepts
Quetico	Loamy, mixed, acid, frigid Lithic Udorthents
Rhinebeck	Fine, illitic, mesic Aeric Ochraqualfs
Rhinebeck Variant	Fine, illitic, nonacid, mesic Aeric Haplaquepts
*Ruse	Loamy, mixed, nonacid, frigid Lithic Haplaquepts
Saprists	Saprists
Scarboro	Sandy, mixed, mesic Histic Humaquepts
Scriba	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
Shaker	Coarse-loamy over clayey, mixed, nonacid, mesic Aeric Haplaquepts
Sodus	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Sun	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Teel	Coarse-silty, mixed, mesic Fluvaquentic Eutrochrepts
Udifluvents	Udifluvents
Udorthents	Udorthents
*Vergennes	Very fine, illitic, mesic Glossaquic Hapludalfs
Wareham	Mixed, mesic Humaqueptic Psammaquents
Wayland	Fine-silty, mixed, nonacid, mesic Mollic Fluvaquents
Whately	Coarse-loamy over clayey, mixed, nonacid, mesic, Mollic Haplaquepts
Willette	Clayey, illitic, euic, mesic Terric Medisaprists
Williamson	Coarse-silty, mixed, mesic Typic Fragiochrepts
Wilpoint	Very fine, mixed, mesic Aquic Hapludalfs
Windsor	Mixed, mesic Typic Udipsamments

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	VERY DEEP SOILS ON TILL PLAINS						
Moderately coarse textured and medium textured, brownish and grayish soils; formed in glacial till derived from limestone			Nellis	Amenia	Massena	Massena Sun	Sun
Moderately coarse textured and medium textured, brownish soils mantled with silty sediments; formed in glacial till derived from sandstone, gneiss, and some limestone			Lowville				
Moderately coarse textured and medium textured, brownish soils; formed in glacial till derived from sandstone, limestone, and gneiss			Madrid	Bombay			
Moderately coarse textured and medium textured, brownish and grayish soils; formed in glacial till derived from schist and gneiss			Bice**			Ensley**	Ensley**
Moderately fine textured and medium textured, brownish and grayish soils; formed in glacial till derived from alkaline shale				Danley	Darien		
Moderately coarse textured and medium textured, brownish soils that have a compact fragipan; formed in glacial till derived from sandstone and some limestone, shale, and granite			Sodus	Ira	Scriba		
Medium textured, brownish soils that have a compact fragipan; formed in glacial till derived from shale, sandstone, and slate			Pinckney**	Pinckney**			

See footnotes at end of table.

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS--Continued

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	MODERATELY DEEP SOILS ON TILL PLAINS						
Moderately coarse textured and medium textured, brownish soils; formed in glacial till over limestone bedrock			Galway	Galway			
Moderately coarse textured and medium textured, brownish soils; formed in glacial till over granitic bedrock		Chatfield Millsite**	Chatfield Millsite**				
Medium textured, brownish and grayish soils; formed in glacial till over shale bedrock	Manlius	Manlius	Manlius		Angola		
Moderately fine textured and fine textured, grayish soils; formed in glacial till over shale bedrock					Allis	Allis	
	SHALLOW SOILS ON TILL PLAINS						
Medium textured and moderately coarse textured, brownish and grayish soils; formed in glacial till over limestone or sandstone bedrock		Farmington	Farmington		Newstead	Newstead Ruse**	Ruse**
Medium textured, very channery, brownish soils; formed in glacial till over limestone bedrock	Benson	Benson					
Moderately coarse textured and medium textured, brownish soils; formed in glacial till over sandstone or granitic bedrock		Hollis	Hollis Insula**				
Medium textured, brownish and grayish soils; formed in glacial till over shale bedrock		Nassau					
	VERY SHALLOW SOILS ON TILL PLAINS						
Moderately coarse textured and medium textured, brownish soils; formed in glacial till over limestone bedrock	Galoo	Galoo					
Moderately coarse textured, brownish soils; formed in glacial till over sandstone bedrock		Quetico**					

See footnotes at end of table.

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS--Continued

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	VERY DEEP AND DEEP SOILS ON LOWLAND, LACUSTRINE PLAINS						
Fine textured, grayish soils; formed in glaciolacustrine deposits				Vergennes	Kingsbury	Covington	Livingston
Fine textured, grayish soils; formed in glaciolacustrine deposits				Hudson Heuvelton**	Rhinebeck Muskellunge**	Madalin	Madalin
Moderately fine textured, brownish and grayish soils; formed in glaciolacustrine deposits				Collamer	Niagara	Canandaigua	Canandaigua
Medium textured, brownish soils; formed in glaciolacustrine deposits				Williamson			
	MODERATELY DEEP SOILS ON LOWLAND, LACUSTRINE PLAINS						
Fine textured, grayish soils; formed in glaciolacustrine deposits over limestone bedrock				Wilpoint	Chaumont	Guffin	Guffin
	VERY DEEP SOILS ON OUTWASH PLAINS, TERRACES, DELTAS, AND REMNANT BEACHES						
Moderately coarse textured and medium textured, brownish soils; formed in glaciofluvial material over sand			Agawam				
Moderately coarse textured and medium textured, high lime, brownish and grayish soils; formed in glaciofluvial material over sand and gravel		Alton	Alton	Phelps			Halsey
Moderately coarse textured and medium textured, low lime, brownish soils; formed in glaciofluvial material over sand and gravel		Hoosic					
Moderately coarse textured and coarse textured, brownish, high lime soils; formed in glacio-fluvial material over stratified sand and gravel	Groton						
Coarse textured, high lime, brownish soils; formed in glacio-fluvial material over stratified sand and gravel	Bonaparte						

See footnotes at end of table.

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS--Continued

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	VERY DEEP SOILS ON OUTWASH PLAINS, TERRACES, DELTAS, AND REMNANT BEACHES						
Coarse textured, low lime, brownish soils; formed in glaciofluvial material over sand and gravel	Hinckley						
Coarse textured, brownish and grayish soils; formed in glaciofluvial material over fine and medium sand	Windsor			Deerfield	Wareham	Wareham	Scarboro
Coarse textured, brownish and grayish soils; formed in glaciofluvial material over medium and coarse sand	Plainfield				Junius	Granby Junius	Granby
Coarse textured, moderately coarse textured, and medium textured, brownish and grayish soils; formed in glaciofluvial material over fine sand, very fine sand, or sand; accumulation of clay in the subsoil			Arkport	Galen	Minoa	Lamson	Lamson
Medium textured, brownish soils; formed in very shaly and extremely shaly, glaciofluvial material			Blasdell Lagross**				
Medium textured, brownish soils; formed in shaly, glaciofluvial material			Haights**	Haights**		Gulf**	Gulf**
Moderately coarse textured and medium textured, brownish and grayish soils; formed in glaciofluvial material over clay				Elmridge	Shaker	Shaker	Whately
Coarse textured, brownish soils; formed in glaciofluvial material over clay				Claverack			
	MODERATELY DEEP SOILS ON TERRACES, DELTAS, AND REMNANT BEACHES						
Moderately coarse textured and medium textured, brownish soils; formed in glaciofluvial material	Groton Variant						

See footnotes at end of table.

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS--Continued

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	VERY DEEP SOILS ON FLOOD PLAINS						
Moderately coarse textured, brownish soils; formed in alluvial sediments				Pootatuck			
Medium textured, brownish and grayish soils; formed in alluvial sediments			Hamlin	Teel	Teel	Wayland	Wayland
Fine textured and moderately fine textured, grayish soils; formed in alluvial sediments					Rhinebeck Variant		
Coarse textured to fine textured, brownish and grayish soils; formed in alluvial sediments			Udifluvents	Udifluvents	Fluvaquents	Fluvaquents	Fluvaquents
	VERY DEEP SOILS IN SWAMPS AND BOGS						
Moderately decomposed organic material more than 51 inches thick							Boots
Well decomposed material more than 51 inches thick							Carlisle Carbondale**
Organic material 16 to 50 inches thick over loamy mineral material							Palms
Organic material 16 to 50 inches thick over clayey mineral material							Willette
Well decomposed organic material more than 16 inches thick over mineral material							Saprists
Medium textured to coarse textured, grayish mineral material							Aquents

See footnotes at end of table.

TABLE 19.--RELATIONSHIPS BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF SOILS--Continued

Parent material and soil characteristics*	Excessively drained	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	VERY DEEP SOILS ON TILL PLAINS, OUTWASH PLAINS, AND TERRACES						
Medium textured to coarse textured soils; formed in mixed mineral material disturbed by man		Udorthents	Udorthents	Udorthents			

* The texture given for soils refers to the dominant texture in the subsoil.
** These soils are at high elevations and in a cool temperature regime.

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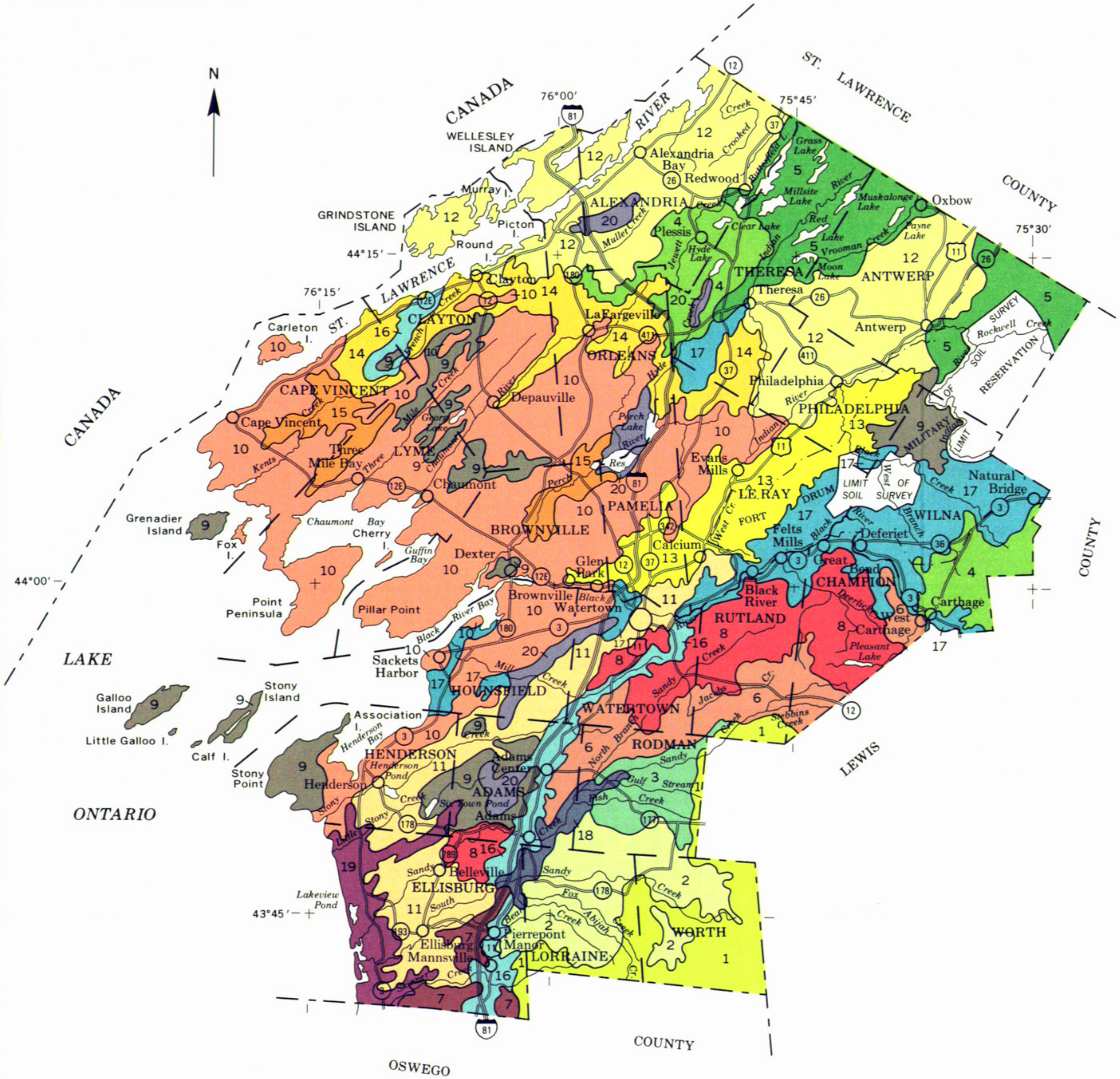
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



LEGEND

AREAS DOMINATED BY VERY DEEP TO VERY SHALLOW SOILS THAT FORMED IN GLACIAL TILL, AND ROCK OUTCROP; AT THE HIGHER, COOLER ELEVATIONS

1	Bice-Ensley-Pinckney: Very deep, well drained to very poorly drained, loamy soils; on uplands
2	Bice-Haights-Pinckney: Very deep, well drained and moderately well drained, loamy soils; on uplands and in valleys
3	Bice-Manlius-Darien: Very deep and moderately deep, excessively drained to somewhat poorly drained, loamy soils; on uplands
4	Ruse-Galoo-Insula-Rock outcrop: Shallow and very shallow, excessively drained to very poorly drained, loamy soils and Rock outcrop; on upland plains
5	Millsite-Rock outcrop-Quetico-Muskellunge: Moderately deep and very shallow, somewhat excessively drained and well drained, loamy soils, very deep, somewhat poorly drained, clayey soils, and Rock outcrop; on lowland plains

AREAS DOMINATED BY VERY DEEP TO VERY SHALLOW SOILS THAT FORMED IN GLACIAL TILL, AND ROCK OUTCROP; AT THE LOWER, WARMER ELEVATIONS

6	Madrid-Galway-Nellis: Very deep and moderately deep, well drained and moderately well drained, loamy soils; on uplands
7	Massena-Sodus-Ira: Very deep, well drained to poorly drained, loamy soils; on uplands
8	Farmington-Galway-Benson: Shallow and moderately deep, excessively drained to moderately well drained, loamy soils; on plains
9	Benson-Newstead-Galoo-Rock outcrop: Moderately deep to very shallow, excessively drained to poorly drained, loamy soils and Rock outcrop; on lowland plains and uplands

AREAS DOMINATED BY VERY DEEP TO VERY SHALLOW SOILS THAT FORMED IN MARINE AND GLACIAL LAKE DEPOSITS, AND ROCK OUTCROP

10	Chaumont-Galoo-Wilpoint-Guffin: Moderately deep to very shallow, excessively drained to very poorly drained, clayey or loamy soils; on lowland plains
11	Collamer-Galway-Niagara: Very deep and moderately deep, well drained to somewhat poorly drained, loamy soils; on lowland plains
12	Rhinebeck-Hudson-Rock outcrop: Very deep, somewhat poorly drained and moderately well drained, clayey soils and Rock outcrop; on lowland plains
13	Hudson-Collamer-Rhinebeck: Very deep, moderately well drained and somewhat poorly drained, clayey or loamy soils; on lowland plains
14	Vergennes-Kingsbury-Elmridge: Very deep, moderately well drained and somewhat poorly drained, clayey soils and moderately well drained, loamy soils over clayey sediments; on lowland plains
15	Kingsbury-Covington-Livingston: Very deep, somewhat poorly drained to very poorly drained, clayey soils; on lowland plains

AREAS DOMINATED BY VERY DEEP SOILS THAT FORMED IN GLACIAL OUTWASH AND IN DELTAIC AND ALLUVIAL DEPOSITS

16	Groton-Windsor-Alton: Very deep, excessively drained to well drained, loamy or sandy soils; on ridges, terraces, and plains
17	Plainfield-Windsor-Deerfield: Very deep, excessively drained to moderately well drained, sandy soils; on terraces and plains
18	Blasdell-Teel-Phelps: Very deep, well drained to somewhat poorly drained, loamy soils; on terraces and flood plains

AREAS DOMINATED BY VERY DEEP SOILS THAT FORMED MAINLY IN ORGANIC DEPOSITS

19	Saprists-Aquents-Groton-Minoa: Very deep, very poorly drained, organic soils and very poorly drained, somewhat poorly drained, and excessively drained, sandy or loamy soils; on lowland plains
20	Carlisle-Palms-Willette: Very deep, very poorly drained, organic soils; in lowland bogs and depressions

COMPILED 1983

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

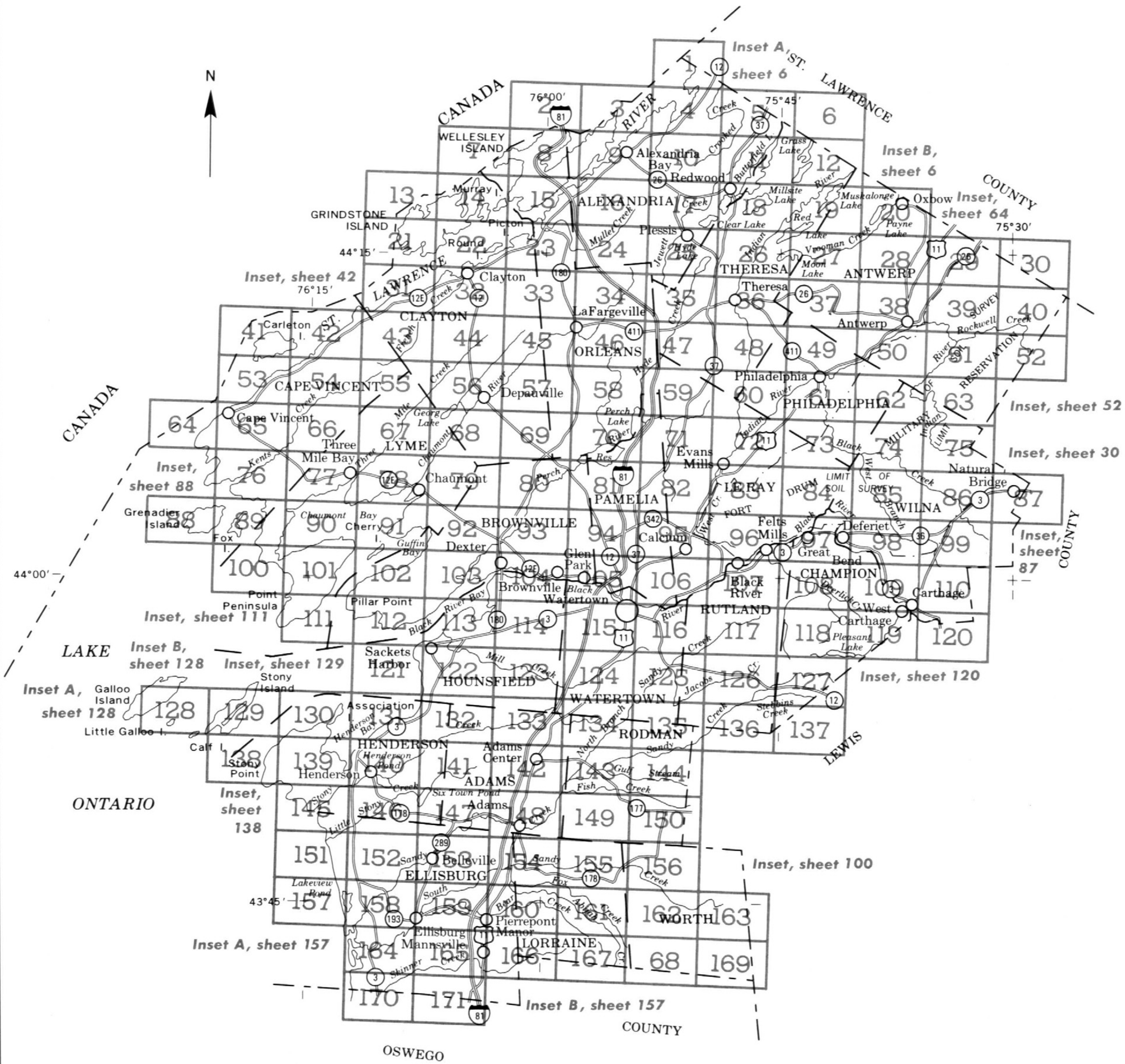
GENERAL SOIL MAP

JEFFERSON COUNTY, NEW YORK

Scale 1:380,160

1 0 1 2 3 4 5 6 Miles

1 0 5 10 Km



INDEX TO MAP SHEETS

JEFFERSON COUNTY, NEW YORK

Scale 1:380,160

1 0 1 2 3 4 5 6 Miles

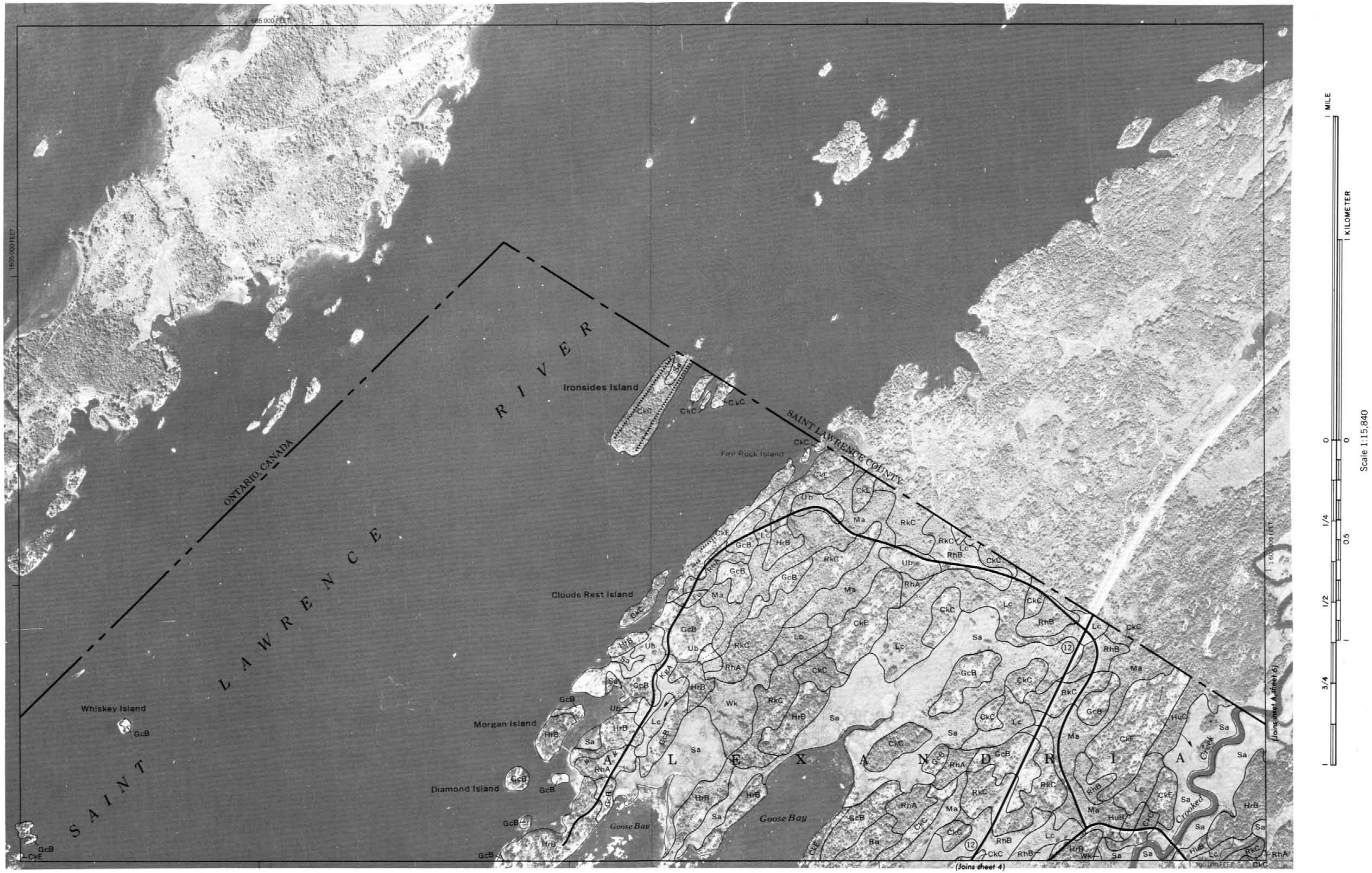
1 0 5 10 Km

SOIL LEGEND

Publication symbols consist of letters or a combination of letters and a number(e.g., Bt, CkC, or HyE3). The first letter, always a capital is the initial letter of the soil name. The second letter is lower case and separates map units, except those that are slope phases, having names that begin with the same letter. The third letter, is always a capital A, B, C, D, E, or F, indicates the slope. Symbols without a slope letter are for nearly level soils, soils named for higher categories, or for miscellaneous areas. A final number, 3, indicates the soil is severely eroded.

SYMBOL	NAME
AgA	Agawam fine sandy loam, 0 to 3 percent slopes
AgB	Agawam fine sandy loam, 3 to 8 percent slopes
AhA	Allis silt loam, 0 to 3 percent slopes
AhB	Allis silt loam, 3 to 8 percent slopes
AlA	Alton gravelly loam, 0 to 3 percent slopes
AlB	Alton gravelly loam, 3 to 8 percent slopes
AlC	Alton gravelly loam, 8 to 15 percent slopes
AlD	Alton gravelly loam, 15 to 25 percent slopes
AlE	Alton gravelly loam, 25 to 45 percent slopes
AmA	Amenia loam, 0 to 3 percent slopes
AmB	Amenia loam, 3 to 8 percent slopes
AnA	Angola silt loam, 0 to 3 percent slopes
AnB	Angola silt loam, 3 to 8 percent slopes
ArB	Arkport fine sandy loam, 3 to 8 percent slopes
ArC	Arkport fine sandy loam, 8 to 15 percent slopes
Be	Beaches
BfF	Benson channery silt loam, very rocky, 25 to 50 percent slopes
BgB	Benson-Galoo complex, very rocky, 0 to 8 percent slopes
BhB	Bice fine sandy loam, 3 to 8 percent slopes
BhC	Bice fine sandy loam, 8 to 15 percent slopes
BhD	Bice fine sandy loam, 15 to 25 percent slopes
BhF	Bice fine sandy loam, 25 to 50 percent slopes
BkC	Bice very stony fine sandy loam, 0 to 15 percent slopes
BlB	Bice-Haights complex, undulating
BlC	Bice-Haights complex, rolling
BmB	Bice-Pinckney complex, undulating
BmC	Bice-Pinckney complex, rolling
BmD	Bice-Pinckney complex, hilly
BnA	Blasdell shaly silt loam, 0 to 3 percent slopes
BnB	Blasdell shaly silt loam, 3 to 8 percent slopes
BnC	Blasdell shaly silt loam, 8 to 15 percent slopes
BoA	Bombay loam, 0 to 3 percent slopes
BoB	Bombay loam, 3 to 8 percent slopes
BpB	Bonaparte gravelly loamy fine sand, 0 to 8 percent slopes
BpC	Bonaparte gravelly loamy fine sand, 8 to 15 percent slopes
Bt	Boots muck
Ca	Canandaigua silt loam
Cb	Canandaigua mucky silt loam
Cc	Carbondale muck
Cd	Carlisle muck
ChB	Chatfield loam, rocky, 0 to 8 percent slopes
CkC	Chatfield-Rock outcrop complex, rolling
CkE	Chatfield-Rock outcrop complex, steep
ClA	Chaumont silty clay, 0 to 3 percent slopes
ClB	Chaumont silty clay, 3 to 8 percent slopes
CmA	Claverack loamy fine sand, 0 to 3 percent slopes
CmB	Claverack loamy fine sand, 3 to 8 percent slopes
CnB	Collamer silt loam, 3 to 8 percent slopes
CnC	Collamer silt loam, 8 to 15 percent slopes
CnC3	Collamer silt loam, 8 to 15 percent slopes, severely eroded
CoB	Collamer silt loam, bedrock substratum, 3 to 8 percent slopes
Cp	Covington silty clay
DcB	Danley silt loam, 3 to 8 percent slopes
DcC	Danley silt loam, 8 to 15 percent slopes
DcD	Danley silt loam, 15 to 25 percent slopes
DdA	Darien silt loam, 0 to 3 percent slopes
DdB	Darien silt loam, 3 to 8 percent slopes
DdC	Darien silt loam, 8 to 15 percent slopes
DeB	Deerfield loamy fine sand, 0 to 8 percent slopes
Dp	Dumps
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes
Em	Ensley silt loam
En	Ensley very stony silt loam
FaB	Farmington loam, 0 to 8 percent slopes
Fu	Fluvaquents-Udifluvents complex, frequently flooded
GaA	Galen fine sandy loam, 0 to 3 percent slopes
GaB	Galen fine sandy loam, 3 to 8 percent slopes
GbB	Galoo-Rock outcrop complex, 0 to 8 percent slopes
GcB	Galoo, acid-Rock outcrop complex, 0 to 8 percent slopes
GlA	Galway silt loam, 0 to 3 percent slopes
GlB	Galway silt loam, 3 to 8 percent slopes
GlC	Galway silt loam, 8 to 15 percent slopes
GmC	Galway very stony silt loam, 0 to 15 percent slopes
Gr	Granby mucky loamy fine sand
GtA	Groton gravelly loam, 0 to 3 percent slopes
GtB	Groton gravelly loam, 3 to 8 percent slopes
GtC	Groton gravelly loam, 8 to 15 percent slopes
GtD	Groton gravelly loam, 15 to 25 percent slopes
GtE	Groton gravelly loam, 25 to 35 percent slopes
GuB	Groton Variant gravelly loam, 0 to 8 percent slopes
Gv	Guffin clay
Gw	Gulf silt loam
HaB	Haights-Gulf silt loams, undulating
Hb	Halsey mucky loam
Hc	Hamlin silt loam
HeB	Heuvelton silt loam, 3 to 8 percent slopes
HeC	Heuvelton silt loam, 8 to 15 percent slopes
HmB	Heuvelton-Millsite-Rock outcrop complex, undulating
HnB	Hinckley gravelly sandy loam, 0 to 8 percent slopes
HoB	Hinckley-Hoosic cobbly sandy loams, 0 to 8 percent slopes
HoE	Hinckley-Hoosic cobbly sandy loams, 15 to 35 percent slopes
HpB	Hollis-Galoo acid, complex, rocky, 0 to 8 percent slopes
HrB	Hollis-Rock outcrop complex, 0 to 8 percent slopes
HuB	Hudson silt loam, 3 to 8 percent slopes
HuC	Hudson silt loam, 8 to 15 percent slopes
HvB	Hudson-Chatfield-Rock outcrop complex, undulating
HyE3	Hudson and Vergennes soils, 15 to 35 percent slopes, severely eroded
InB	Insula-Quetico complex, rocky, 0 to 8 percent slopes
IoB	Insula-Rock outcrop complex, 0 to 8 percent slopes
IrB	Ira gravelly silt loam, 3 to 8 percent slopes
IrC	Ira gravelly silt loam, 8 to 15 percent slopes
Ju	Junius loamy fine sand
KgA	Kingsbury silty clay, 0 to 2 percent slopes
KgB	Kingsbury silty clay, 2 to 6 percent slopes
Kh	Kingsbury-Livingston complex
LaB	Lagross-Haights complex, undulating
LaC	Lagross-Haights complex, rolling
Lb	Lamson fine sandy loam
Lc	Livingston mucky silty clay
Ld	Livingston silty clay loam, frequently flooded
LoA	Lowville silt loam, 0 to 3 percent slopes
LoB	Lowville silt loam, 3 to 8 percent slopes
LoC	Lowville silt loam, 8 to 15 percent slopes
LoD	Lowville silt loam, 15 to 25 percent slopes
Ma	Madalin silt loam
MdA	Madrid sandy loam, 0 to 3 percent slopes
MdB	Madrid sandy loam, 3 to 8 percent slopes
MdC	Madrid sandy loam, 8 to 15 percent slopes
MdD	Madrid sandy loam, 15 to 25 percent slopes
MnB	Manlius shaly silt loam, 3 to 8 percent slopes
MnC	Manlius shaly silt loam, 8 to 15 percent slopes
MoA	Massena silt loam, 0 to 3 percent slopes
MoB	Massena silt loam, 3 to 8 percent slopes
MpB	Massena very stony loam, 0 to 8 percent slopes
MtB	Millsite loam, rocky, 0 to 8 percent slopes
MuC	Millsite-Rock outcrop complex, rolling
MuE	Millsite-Rock outcrop complex, steep
Mv	Minoa fine sandy loam
MwA	Muskellunge silt loam, 0 to 3 percent slopes
MwB	Muskellunge silt loam, 3 to 8 percent slopes
MxC	Muskellunge-Millsite-Rock outcrop complex, rolling
NaC	Nassau shaly silt loam, 8 to 15 percent slopes
NbF	Nassau-Manlius shaly silt loams, rocky, 25 to 50 percent slopes
NlA	Nellis loam, 0 to 3 percent slopes
NlB	Nellis loam, 3 to 8 percent slopes
NlC	Nellis loam, 8 to 15 percent slopes
NlD	Nellis loam, 15 to 25 percent slopes
NmE	Nellis and Madrid soils, steep
Nn	Newstead silt loam
NoA	Niagara silt loam, 0 to 3 percent slopes
NoB	Niagara silt loam, 3 to 8 percent slopes
NpB	Niagara silt loam, bedrock substratum, 2 to 6 percent slopes
Pa	Palms muck
PhA	Phelps gravelly loam, 0 to 3 percent slopes
PhB	Phelps gravelly loam, 3 to 8 percent slopes
PkB	Pinckney-Ensley silt loams, undulating
Pm	Pits, quarry
Pn	Pits, sand and gravel
PoB	Plainfield sand, 0 to 8 percent slopes
PoC	Plainfield sand, rolling
PpD	Plainfield and Windsor soils, hilly
Ps	Pootatuck fine sandy loam
QeB	Quetico-Rock outcrop complex, 2 to 8 percent slopes
RhA	Rhinebeck silt loam, 0 to 3 percent slopes
RhB	Rhinebeck silt loam, 3 to 8 percent slopes
RkC	Rhinebeck-Chatfield-Rock outcrop complex, rolling
Rn	Rhinebeck Variant silty clay loam
Ru	Ruse gravelly loam, rocky
Sa	Saprists and Aquents, ponded
Sc	Scarboro mucky loamy fine sand
SdA	Scriba gravelly silt loam, 0 to 3 percent slopes
SdB	Scriba gravelly silt loam, 3 to 8 percent slopes
Sh	Shaker fine sandy loam
SoB	Sodus gravelly silt loam, 3 to 8 percent slopes
SoC	Sodus gravelly silt loam, 8 to 15 percent slopes
SoD	Sodus gravelly silt loam, 15 to 25 percent slopes
Su	Sun silt loam
Sv	Sun very stony silt loam
Te	Teel silt loam
Ua	Udorthents, loamy
Ub	Udorthents, smoothed
Uc	Udorthents-Udifluvents complex
Ur	Urban land
VeB	Vergennes silty clay loam, 3 to 8 percent slopes
VeC	Vergennes silty clay loam, 8 to 15 percent slopes
Wa	Wareham loamy fine sand
We	Wayland silt loam
Wh	Whately fine sandy loam
Wk	Willette muck
WmB	Williamson silt loam, 3 to 8 percent slopes
WnB	Wilpoint silty clay loam, 3 to 8 percent slopes
WnC	Wilpoint silty clay loam, 8 to 15 percent slopes
WoB	Windsor loamy fine sand, 0 to 8 percent slopes
WoC	Windsor loamy fine sand, 8 to 15 percent slopes
W	Water

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale 1:15,840

N

1

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

2

N

Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

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JEFFERSON COUNTY, NEW YORK NO. 2

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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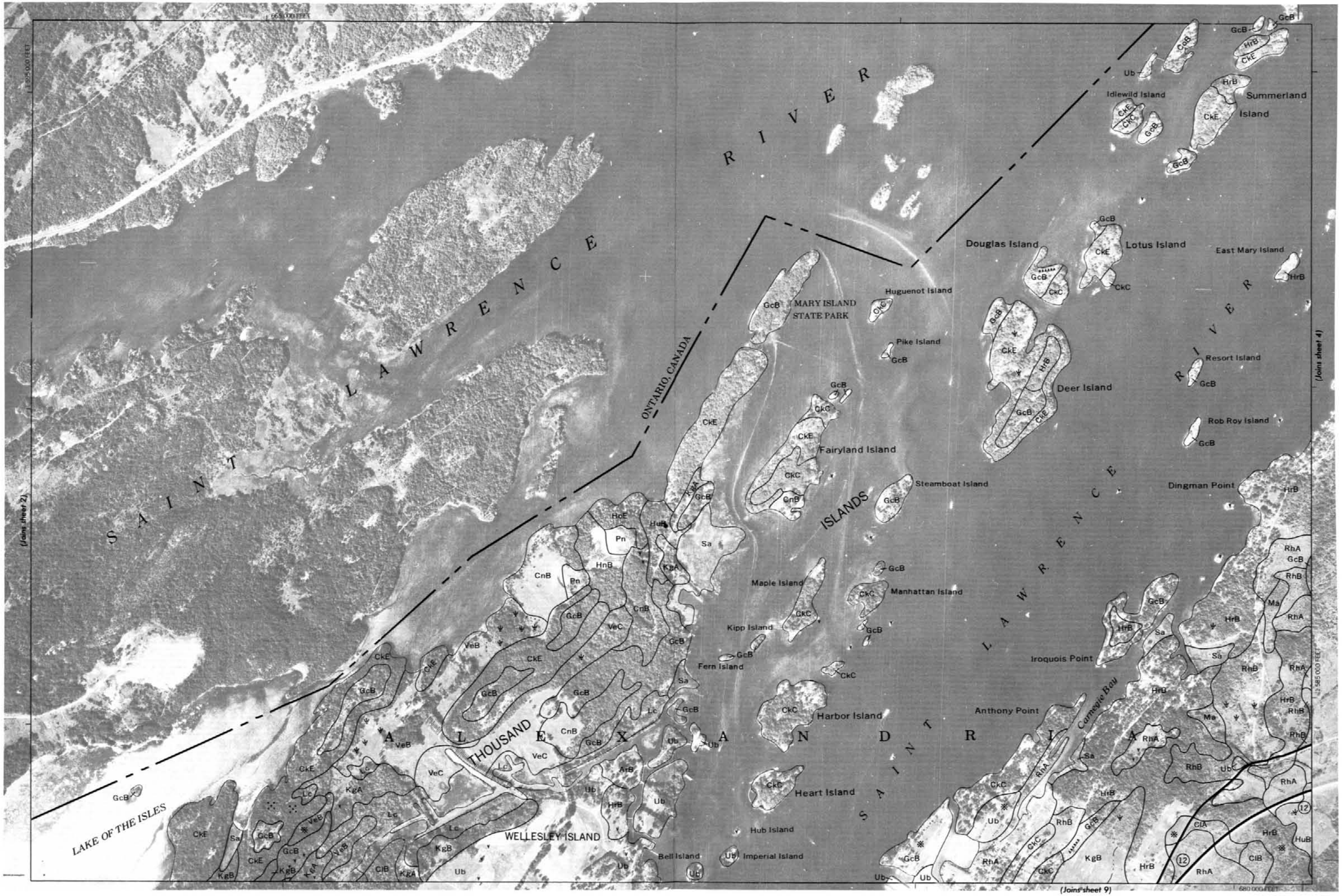

N

1 MILE

1 KILOMETER

0

1/4

1/2

3/4

1

0

0.5

1

Scale 1:15,840

4

N

Scale 1:15 840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

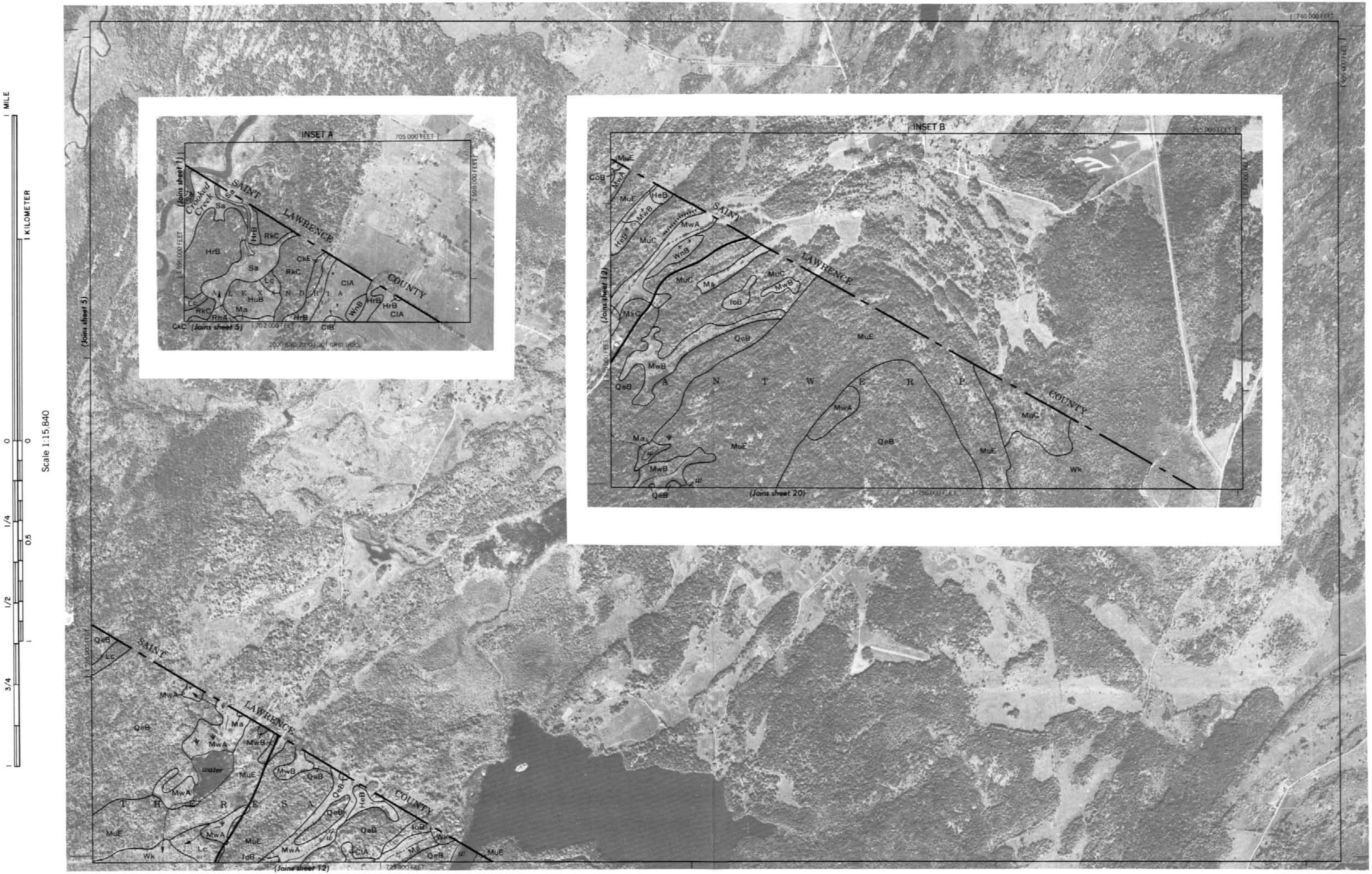
5

N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

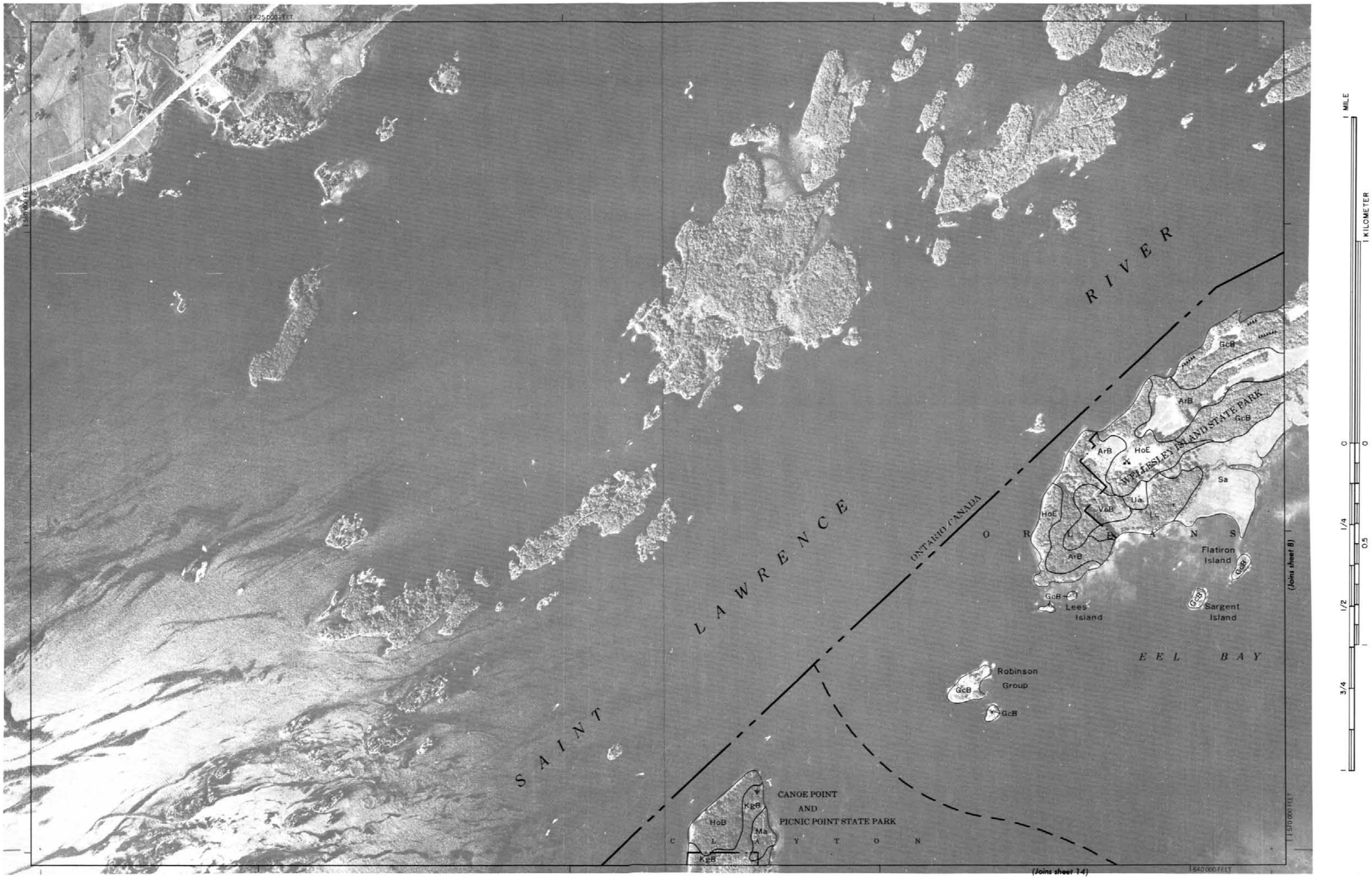
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 7

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



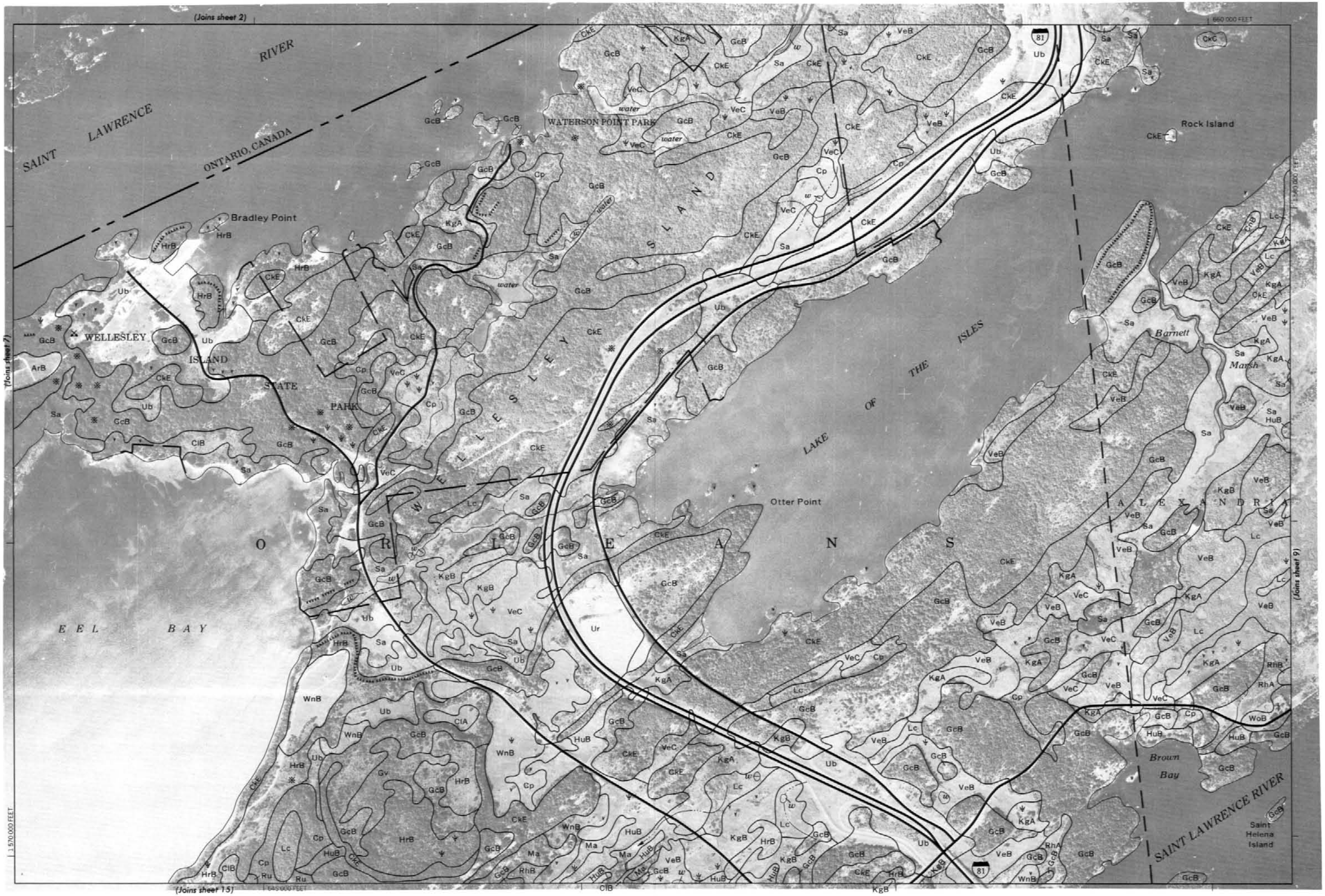
(7)

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

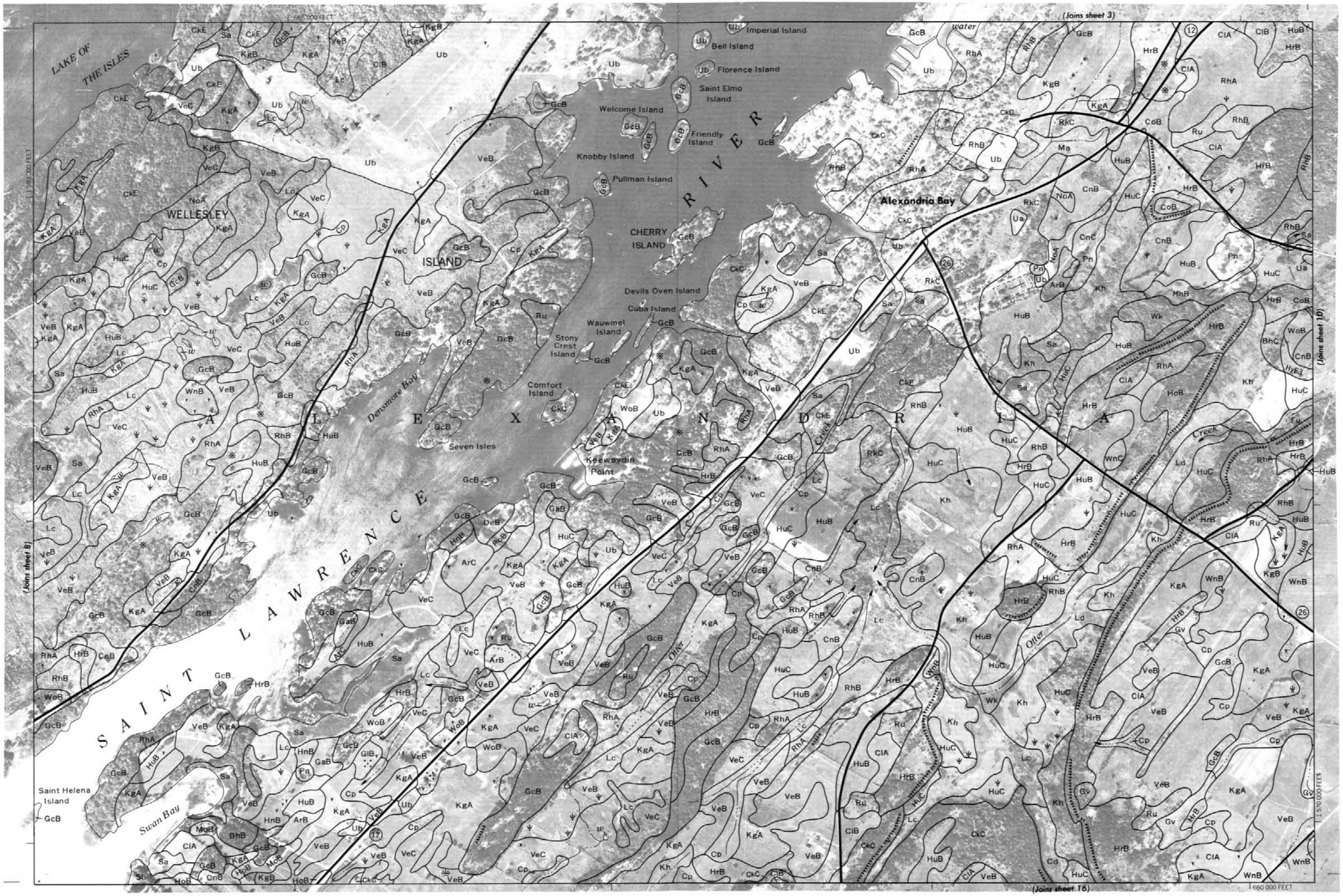
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15 840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0.5
Scale 1:15,840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

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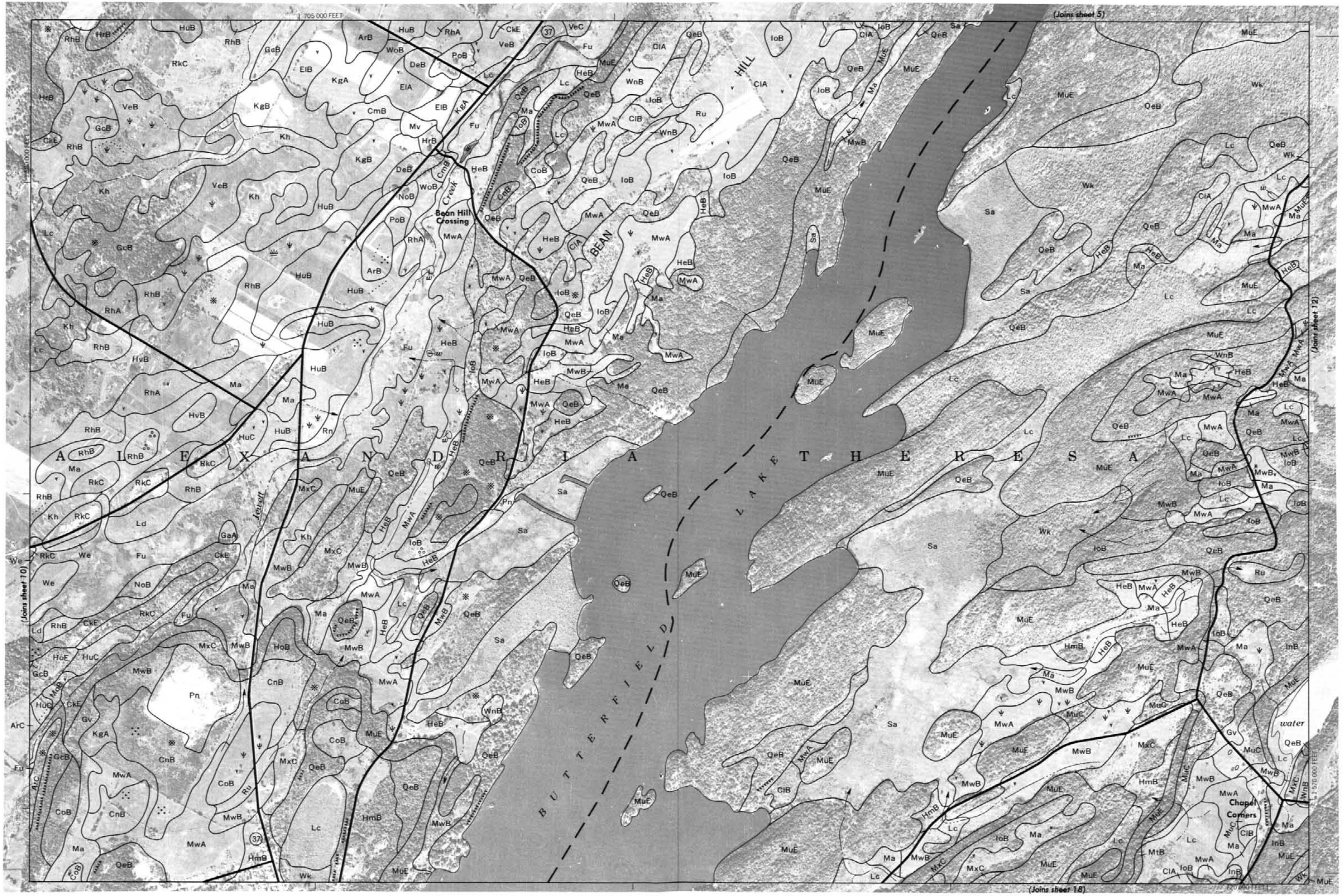

JEFFERSON COUNTY, NEW YORK NO. 11

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

12

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 | 1/4 | 1/2 | 3/4 | 1

0 | 0.5 | 1

Scale 1:15,840

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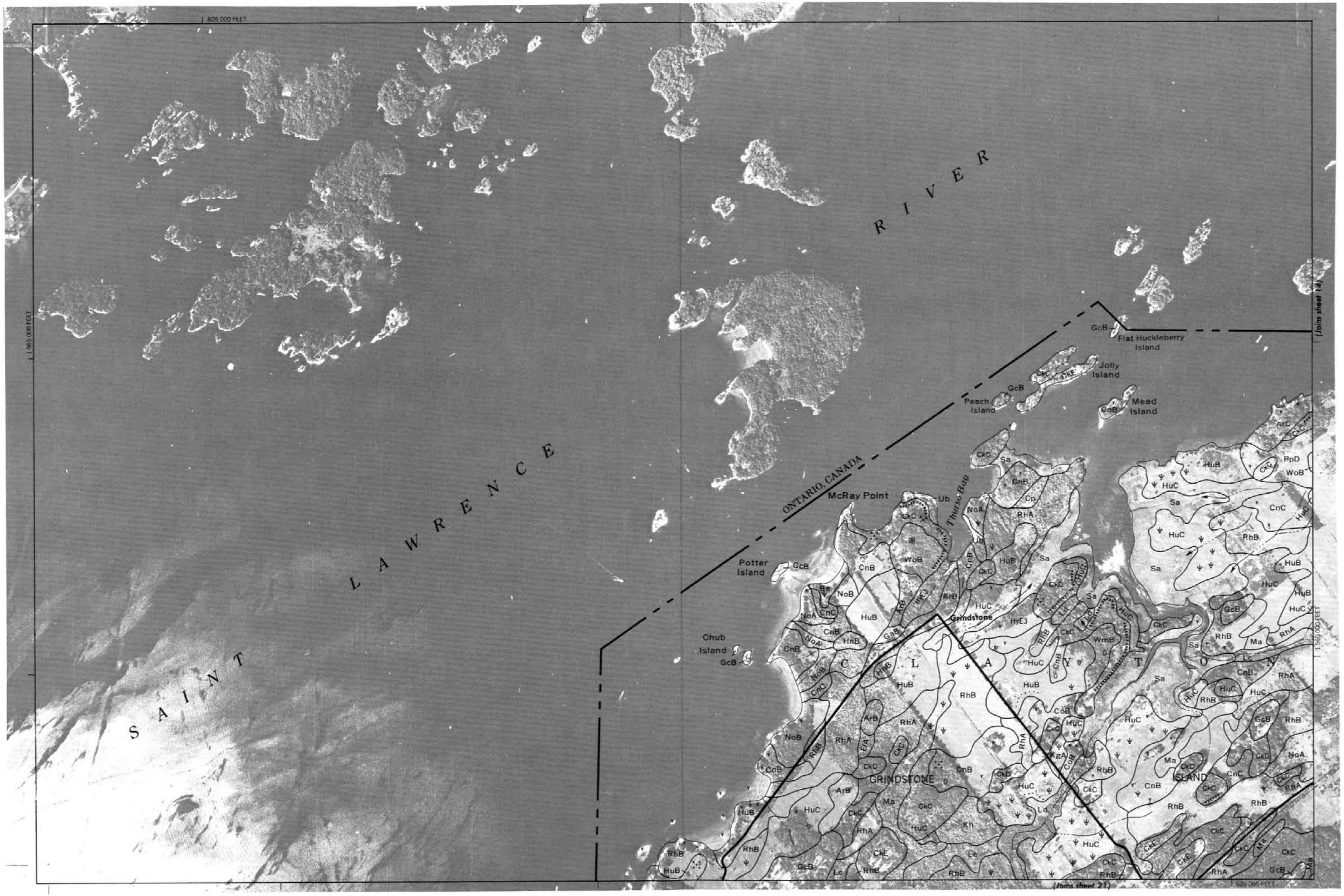


This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

MILE: 0, 1/4, 1/2, 3/4, 1

KILOMETER: 0, 0.5, 1

N

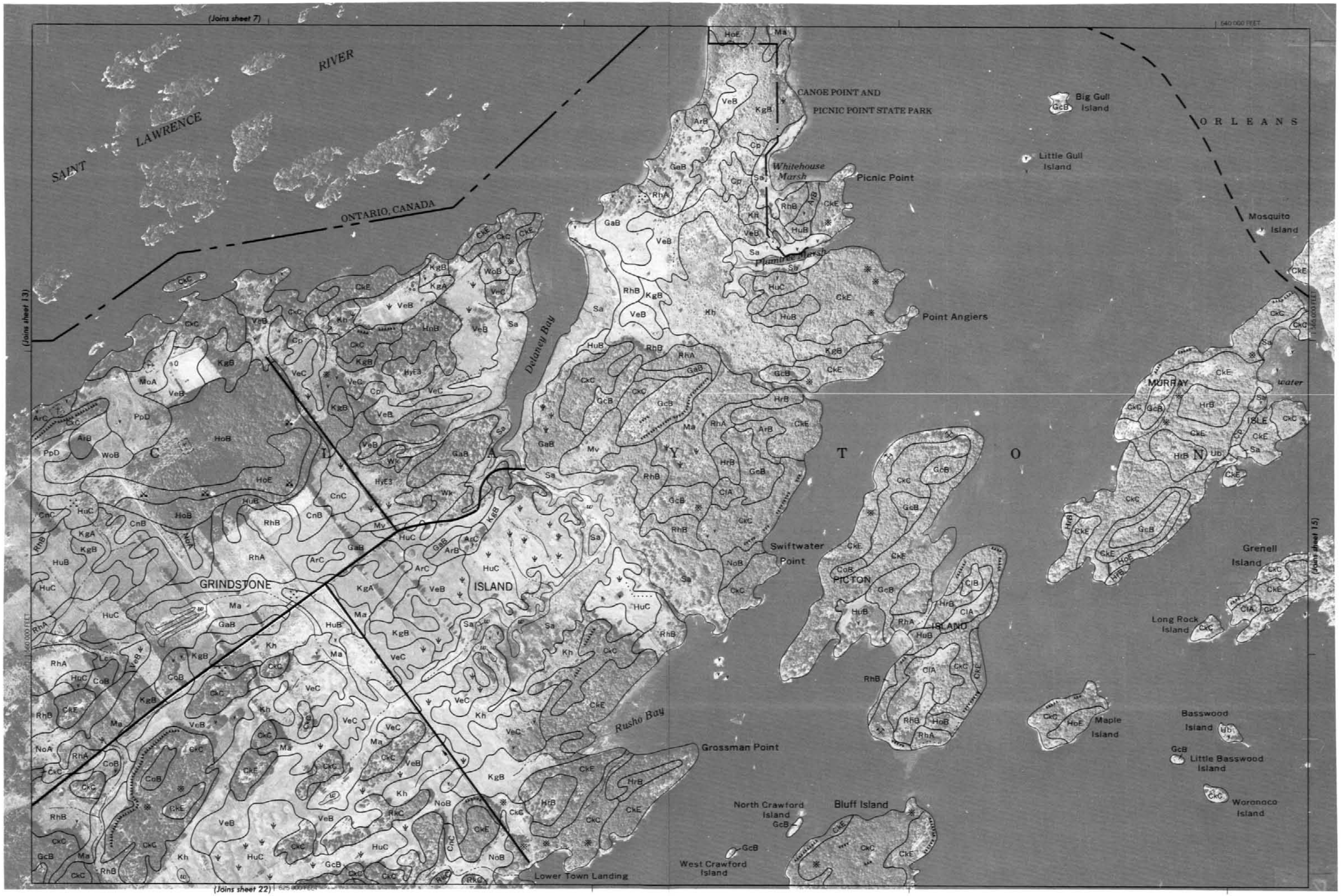
14

N

MILE

KILOMETER

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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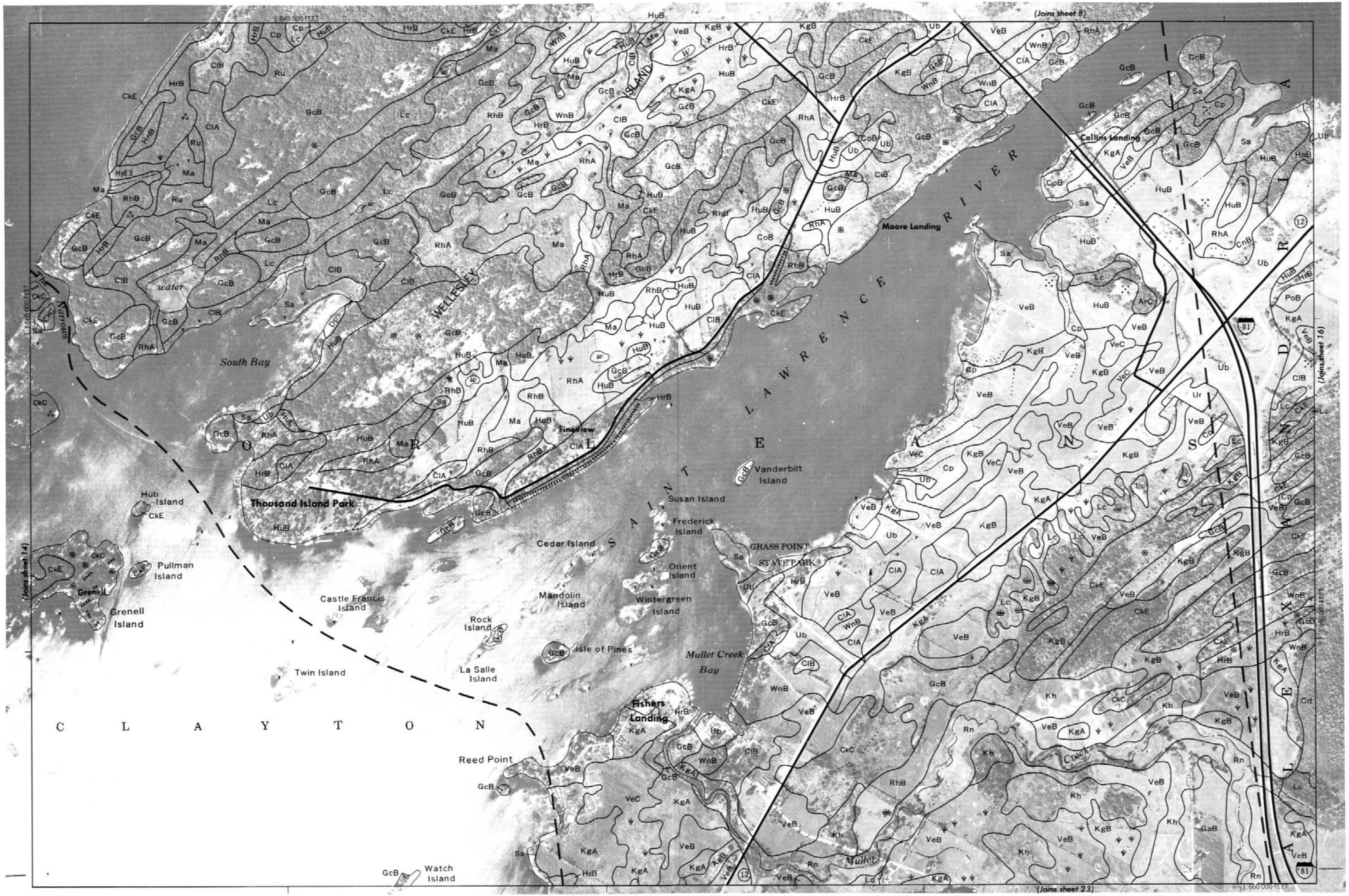
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0
0.5
1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

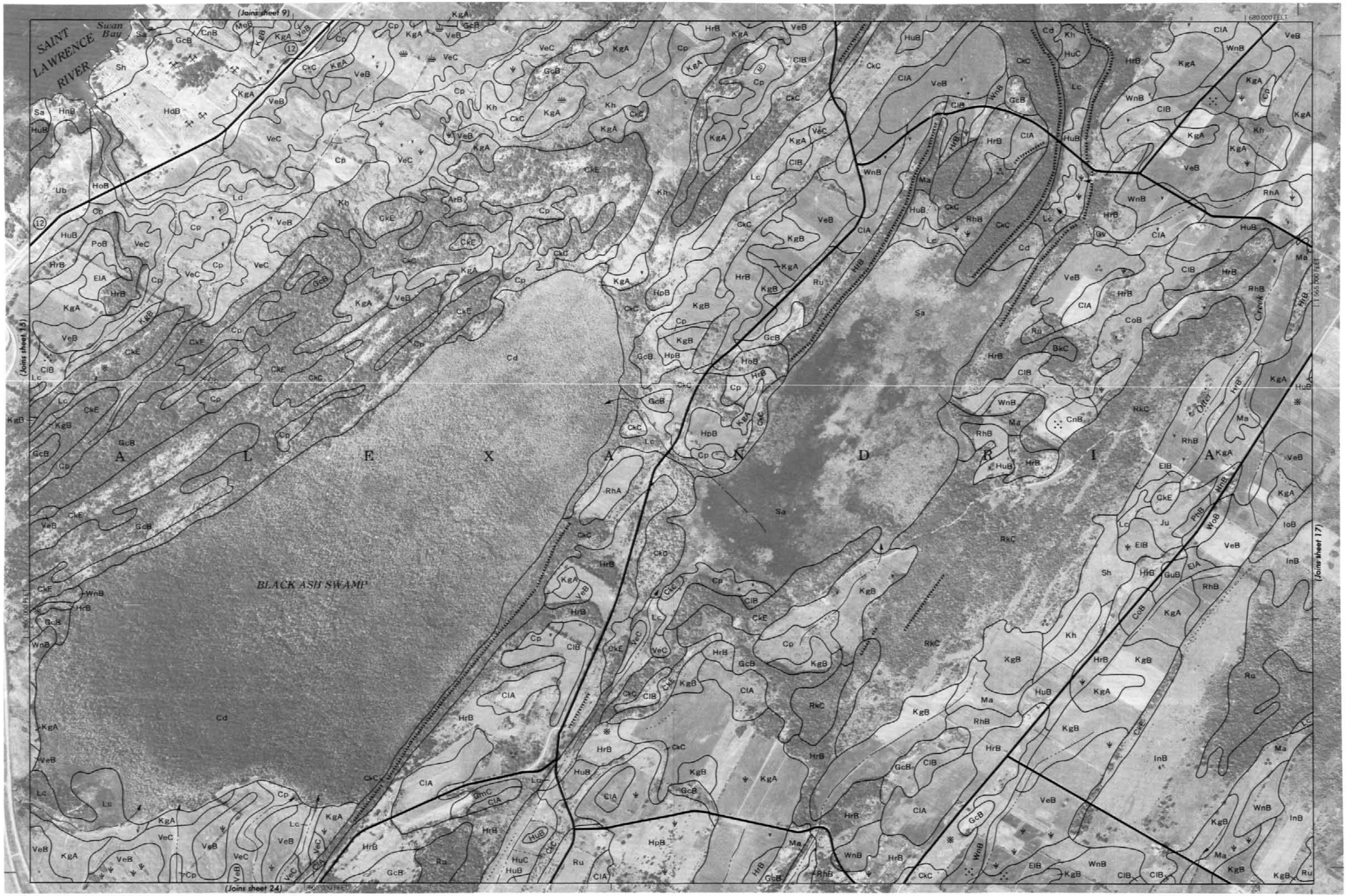
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15,840



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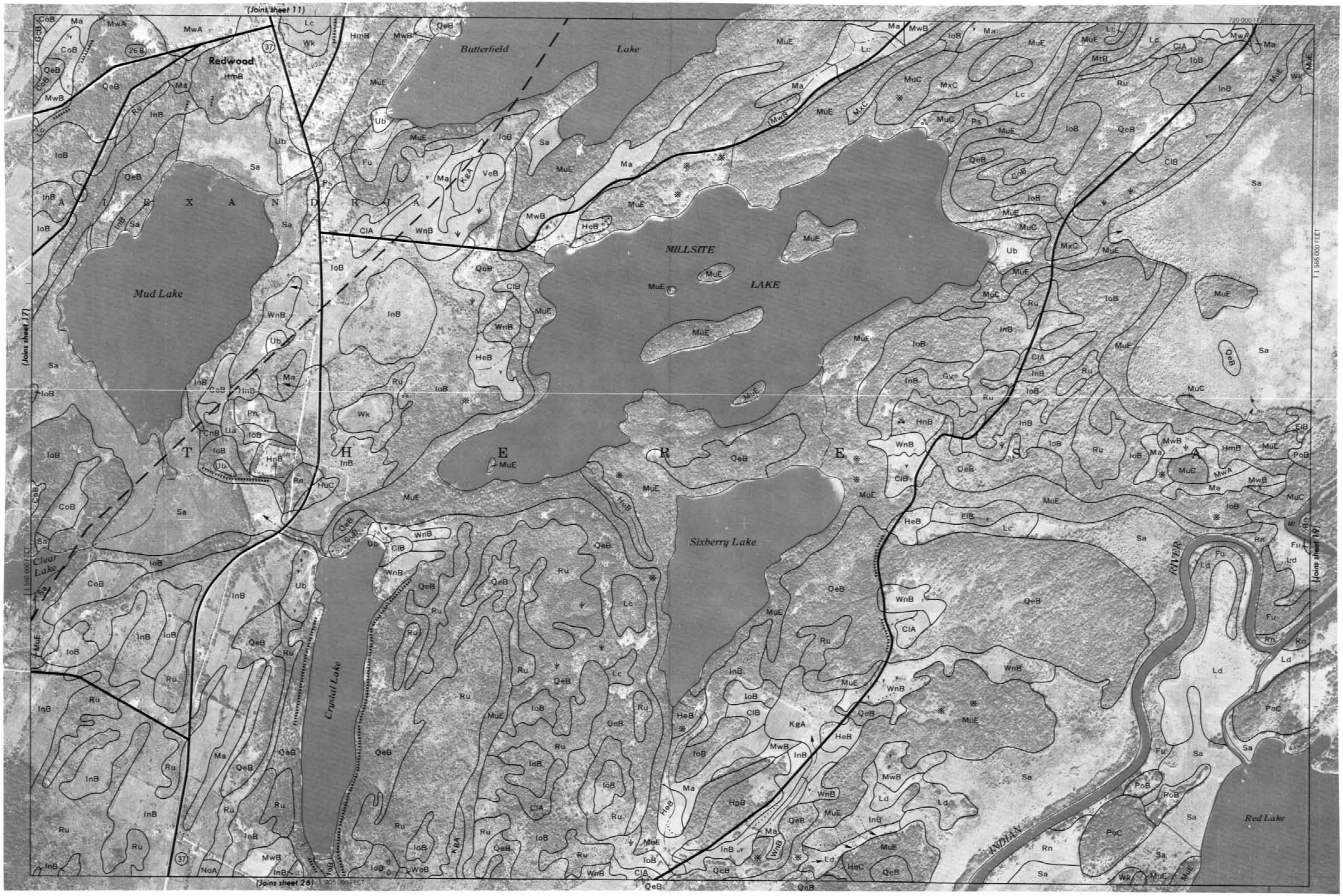
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
Scale 1:15,840
0 1/4 1/2 3/4 1
0 0.5 1



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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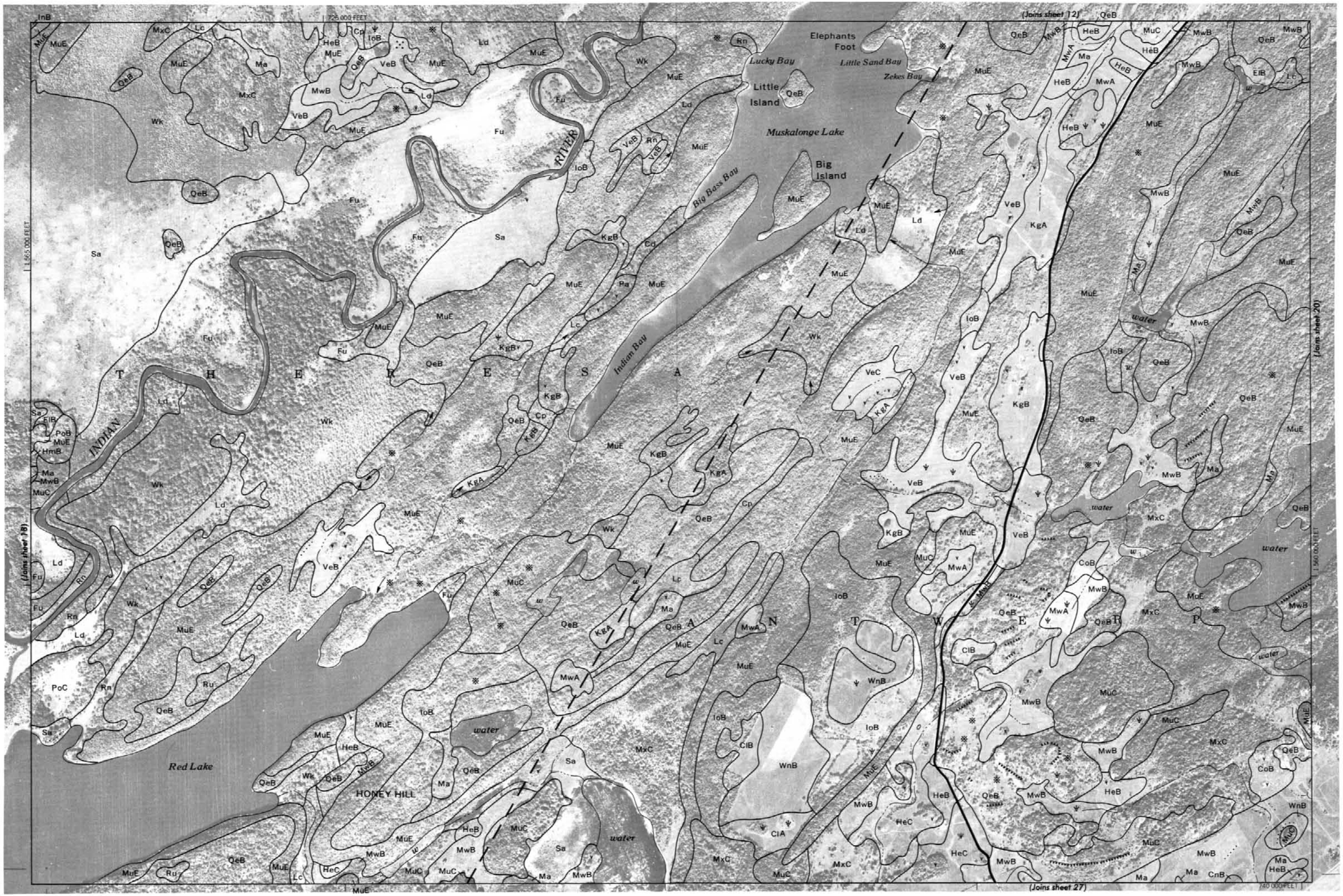
JEFFERSON COUNTY, NEW YORK NO. 19

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0
0.5
1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

Scale 1:15,840

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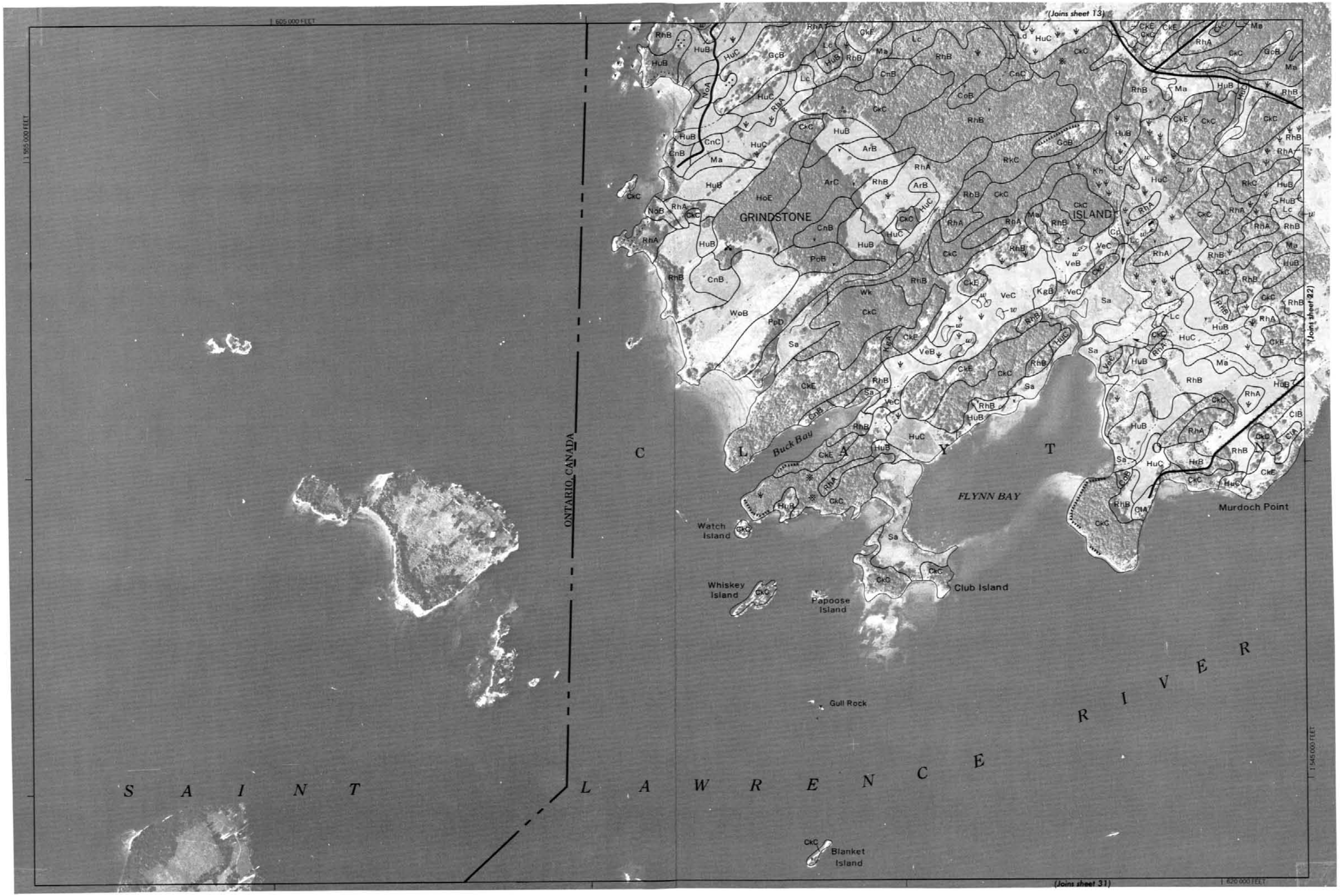


1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
1
Scale 1:15,840
N

(22)

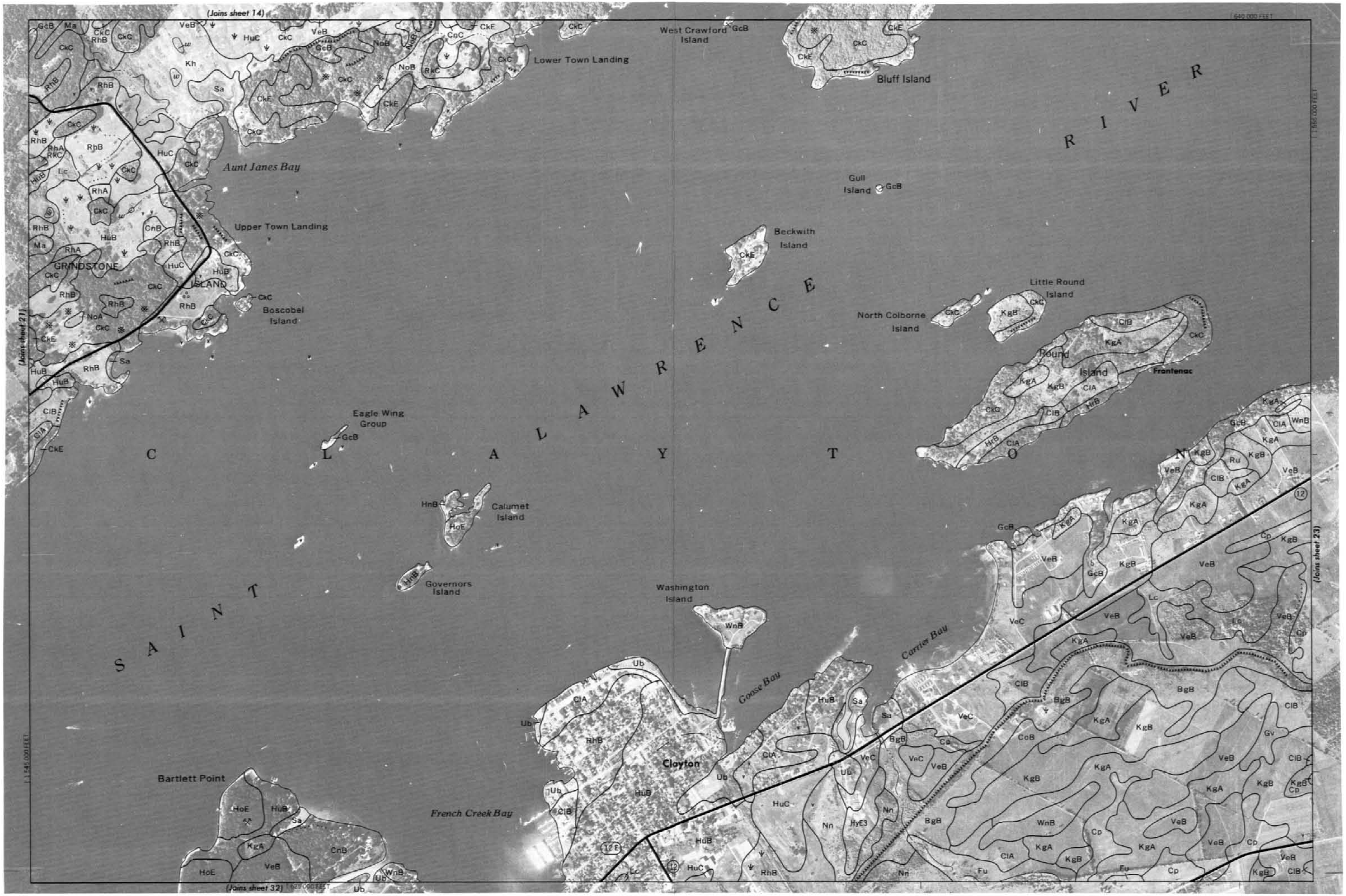
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE 0 1/4 1/2 3/4 1

1 KILOMETER 0 0.5 1

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 22

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

23

N

MILE
1 KILOMETER
Scale 1:15 840

24

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE

1 KILOMETER

0 | 1/4 | 1/2 | 3/4 | 1

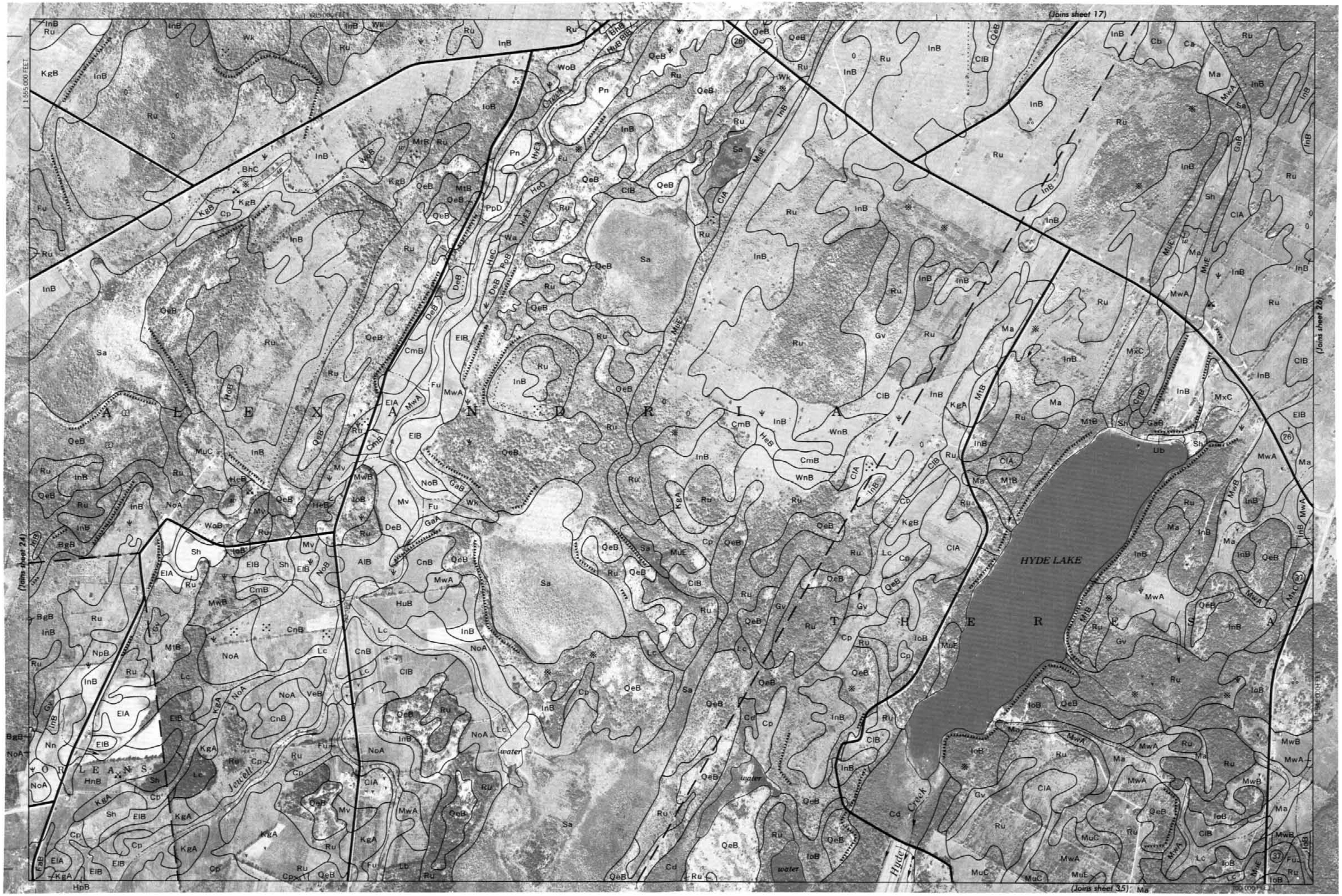
0 | 0.5 | 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 24

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

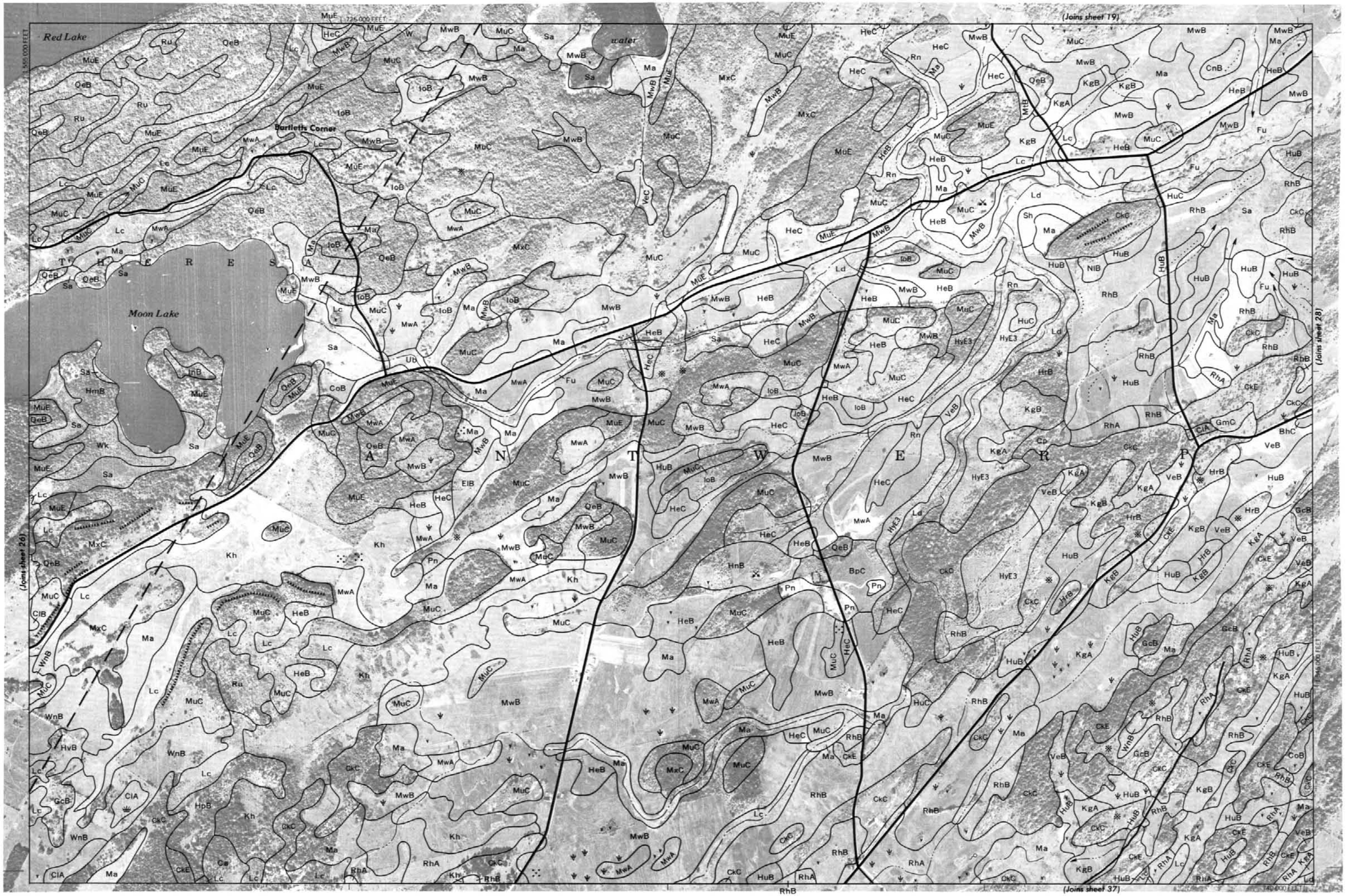
1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 MILE
1 KILOMETER
0 1/4 1/2 3/4
0 0.5
Scale 1:15,840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0
0.5
1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 29

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

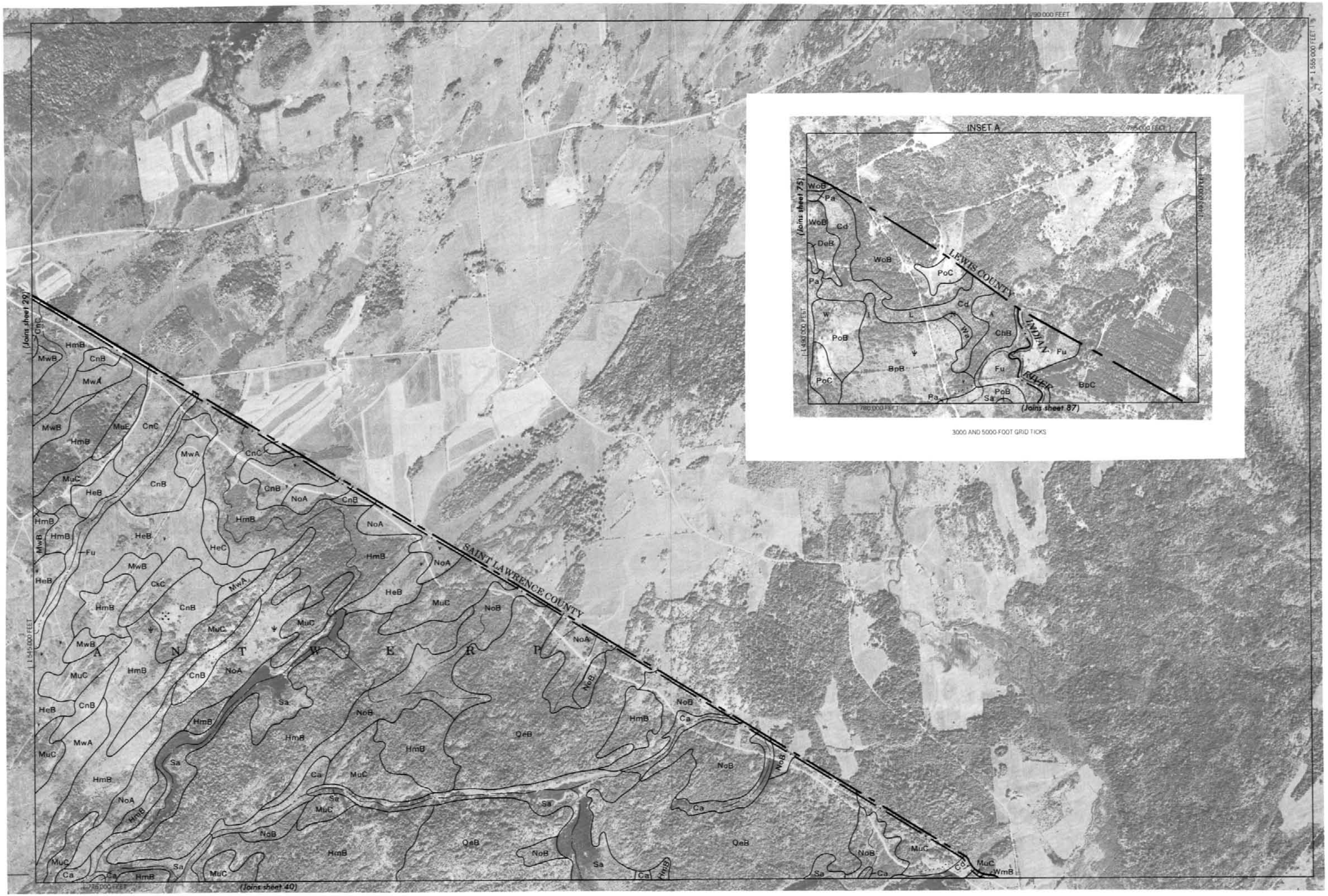
1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

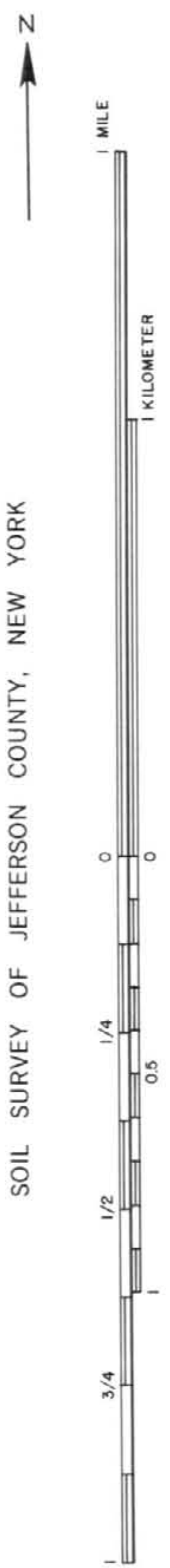
31

N

Scale 1:15,840

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

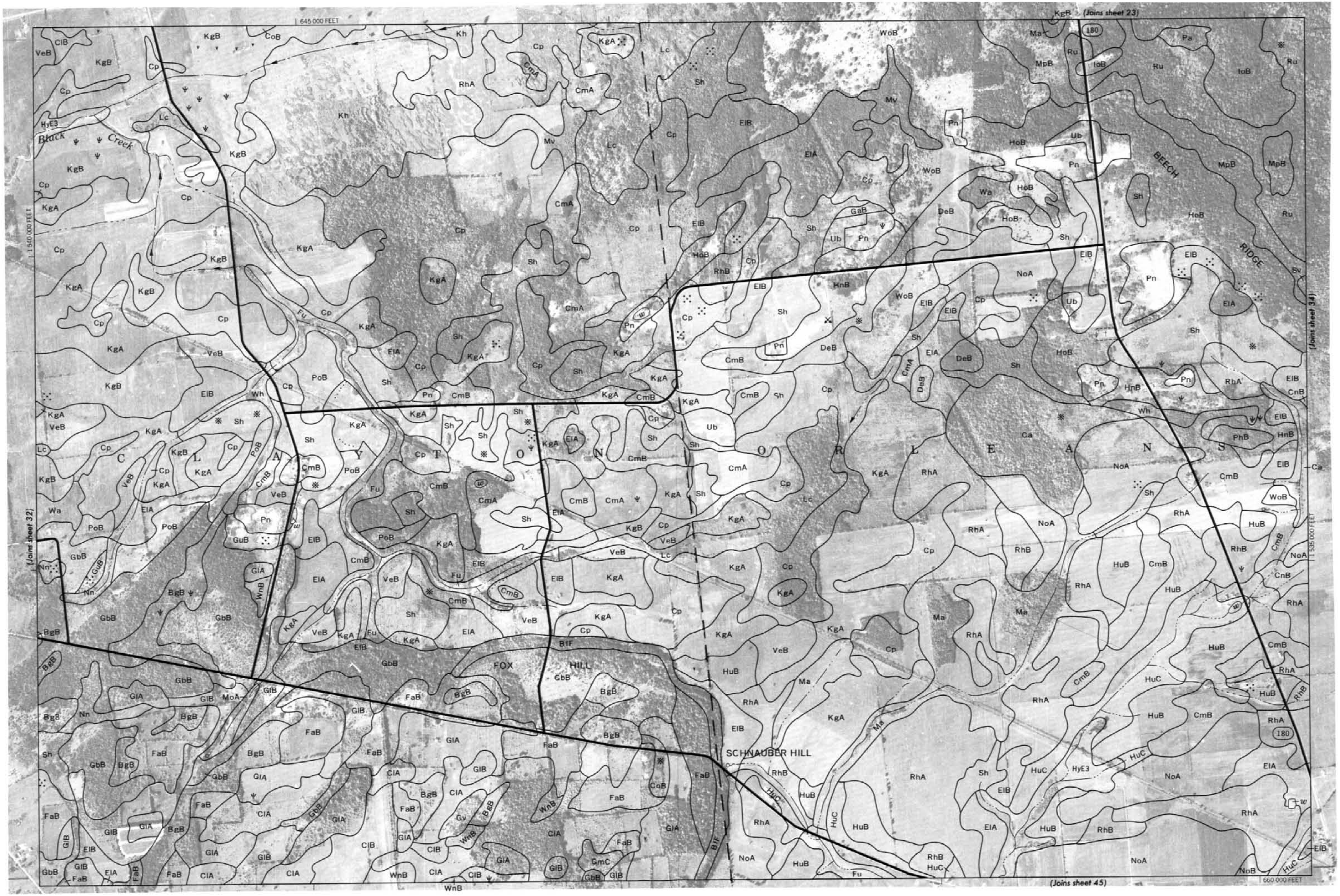
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 33



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

34

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

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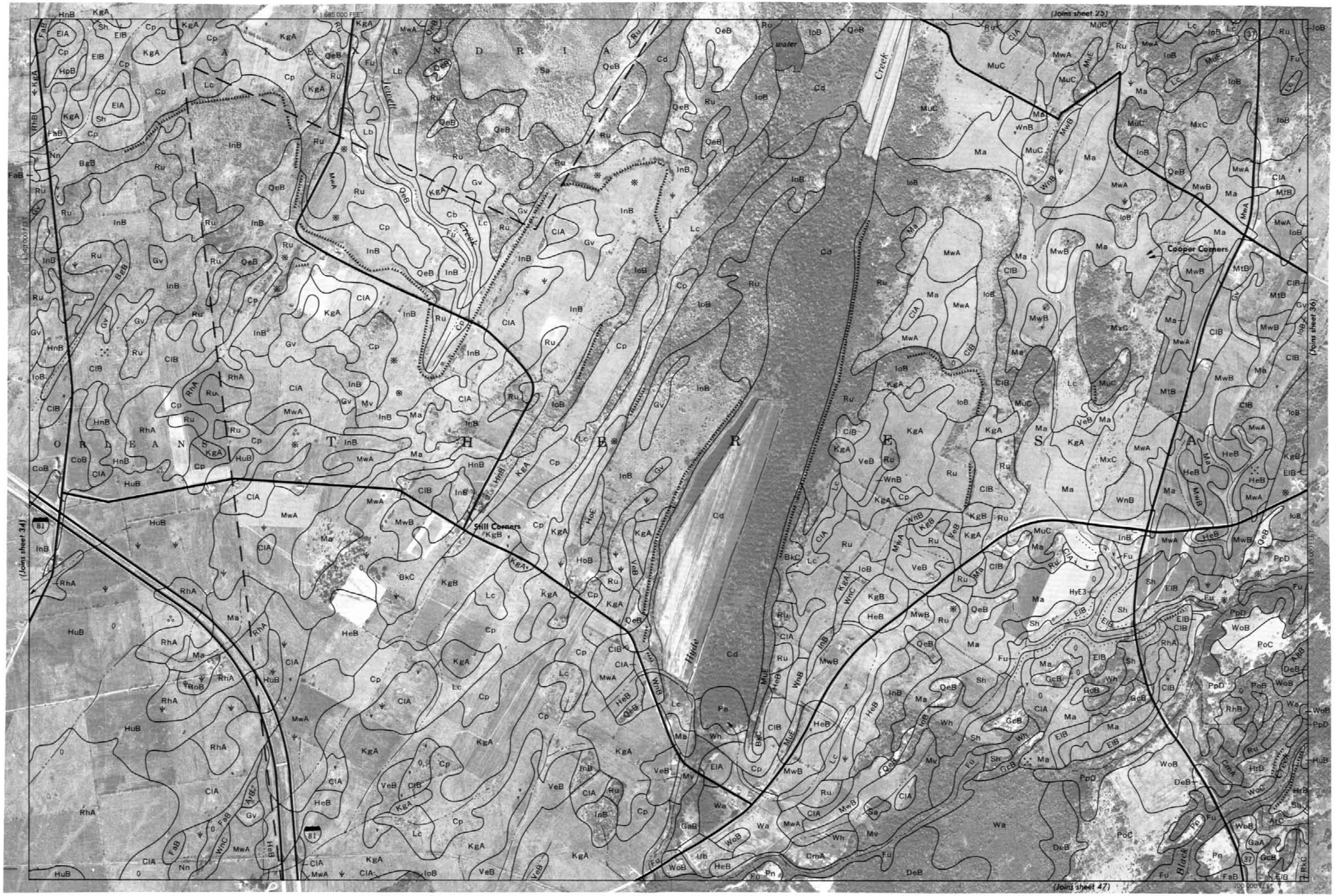

JEFFERSON COUNTY, NEW YORK NO. 35

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE

1 KILOMETER

Scale 1:15,840

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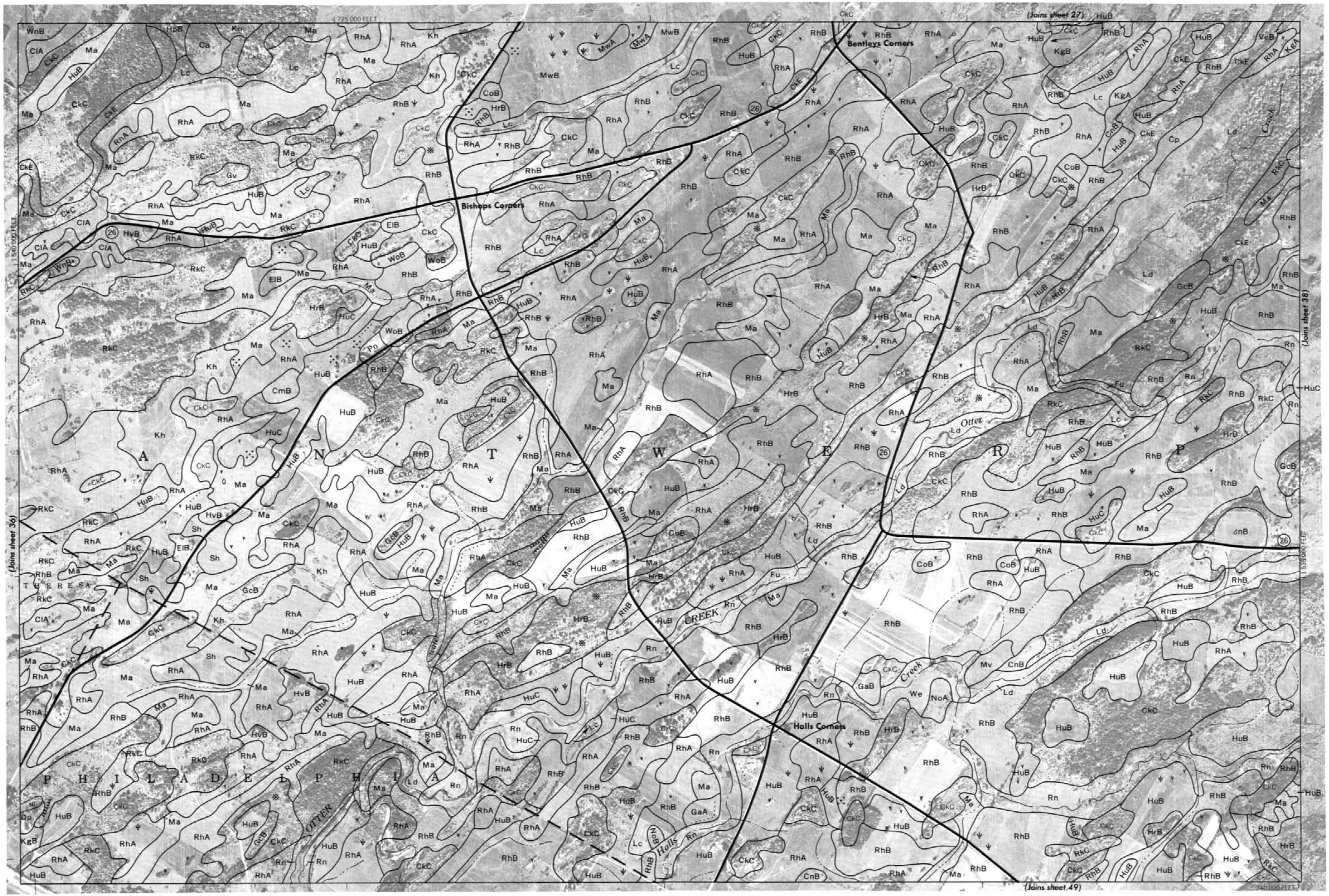
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
Scale 1:15,840

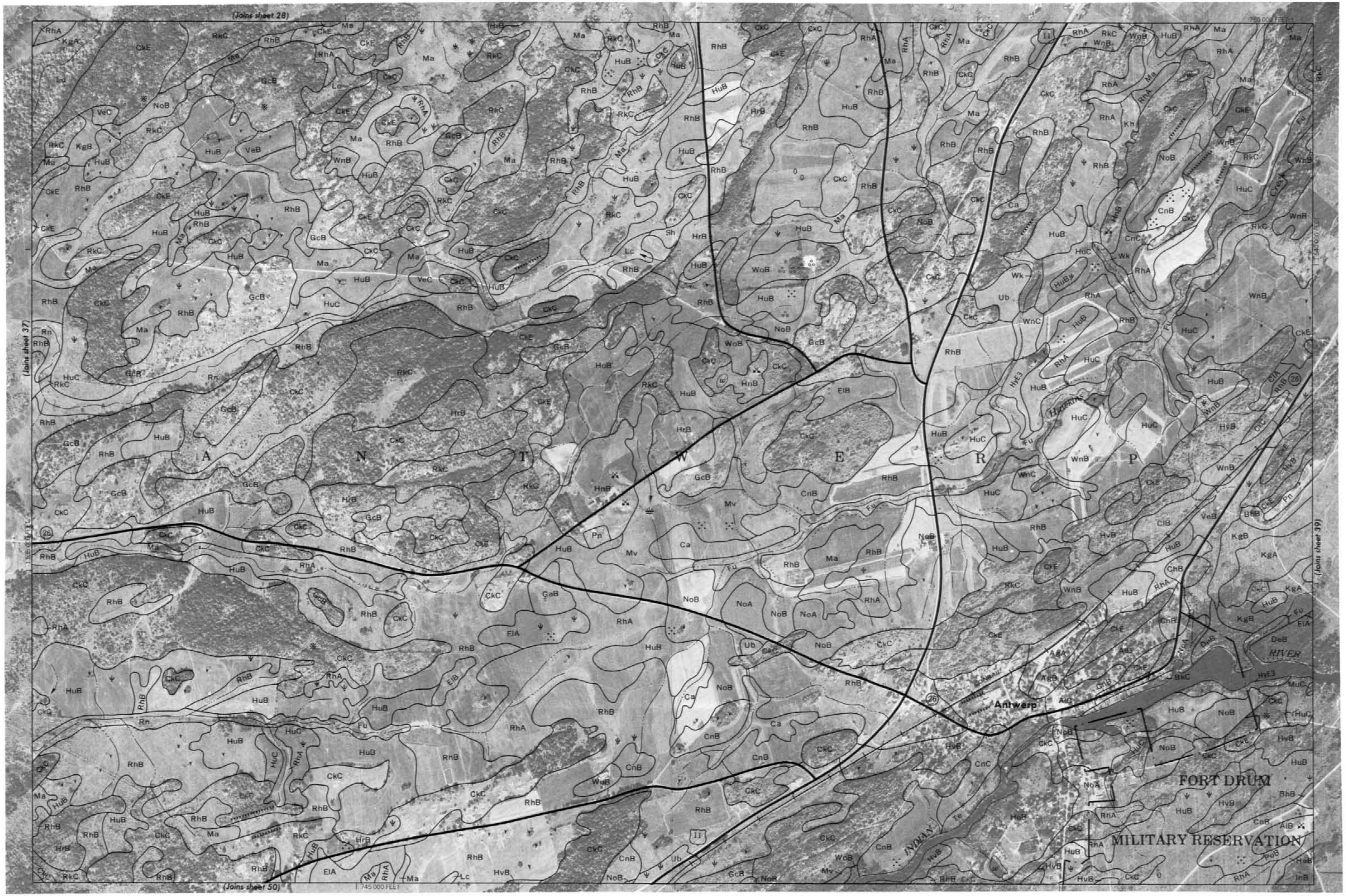
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

MILE: 0 1/4 1/2 3/4 1

KILOMETER: 0 0.5 1



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

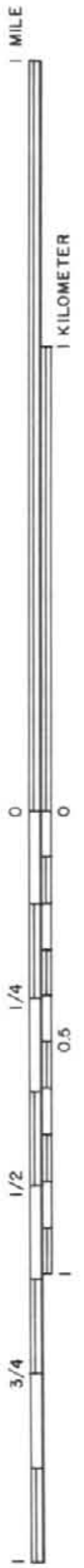
1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840



Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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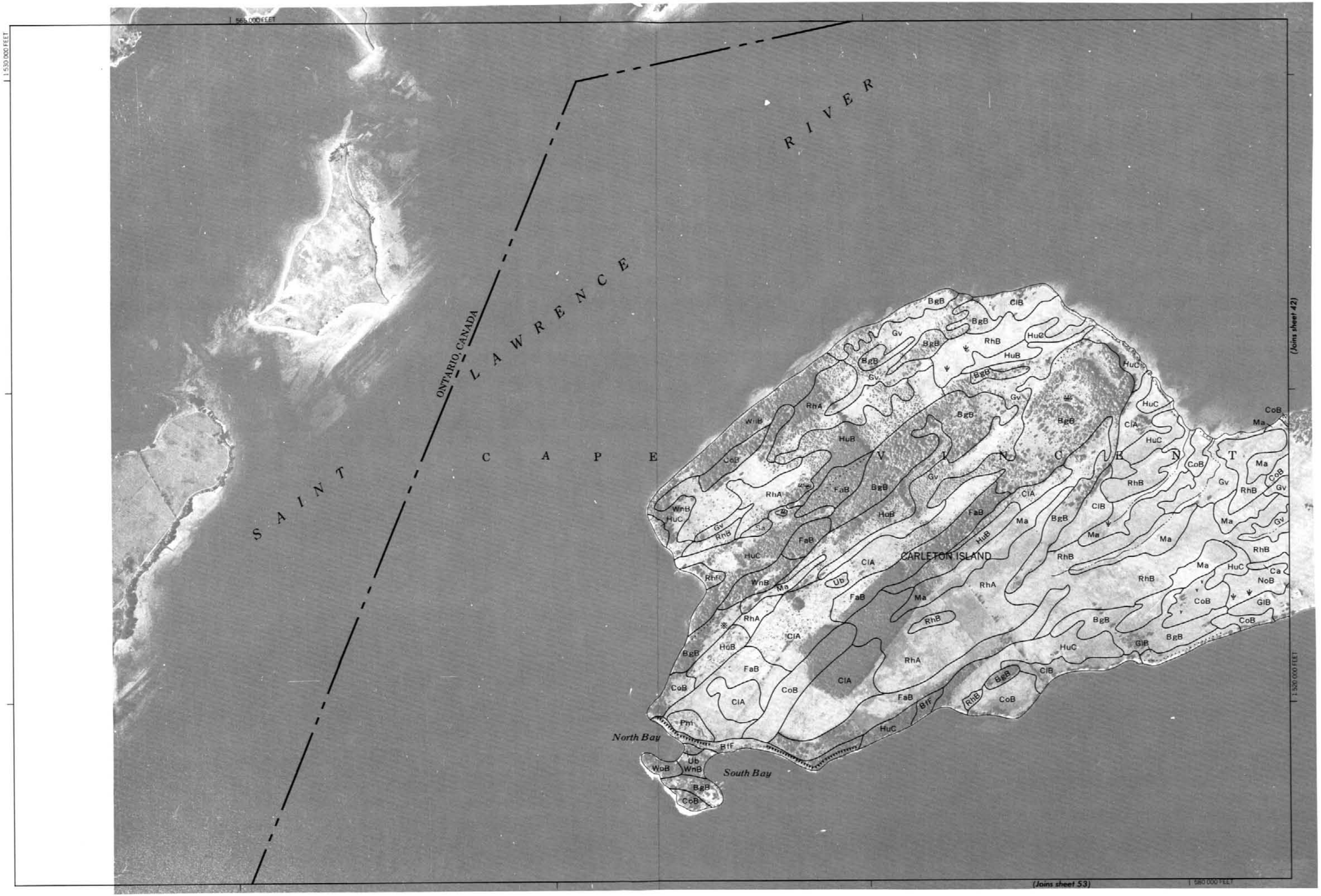
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



41

N

MILE
0
1/4
1/2
3/4
1
KILOMETER
0
0.5
1

Scale 1:15 840

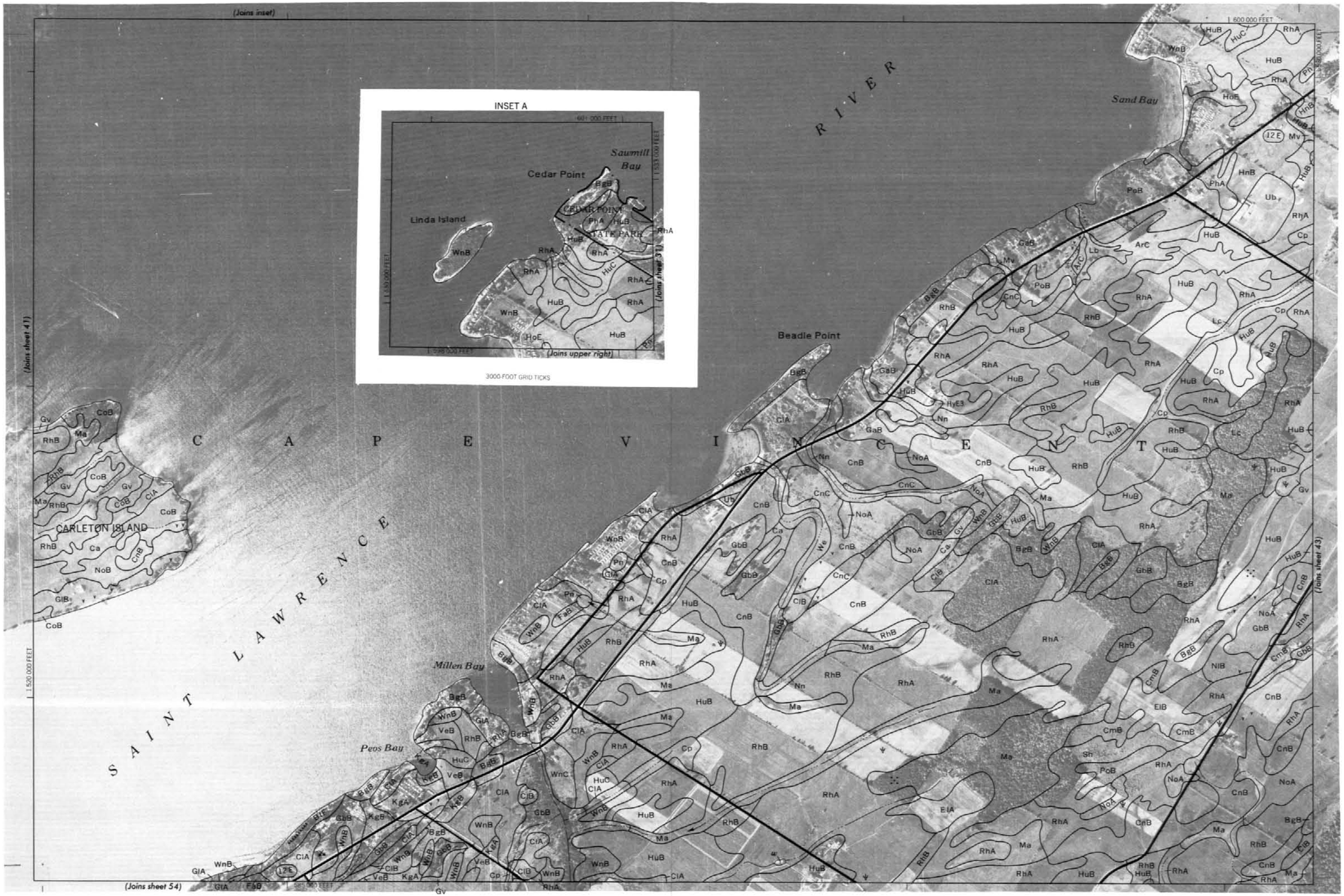
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

MILE
1 KILOMETER
Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

JEFFERSON COUNTY, NEW YORK NO. 43

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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N

1 MILE

KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

1 MILE 3/4 1/2 1/4 0

1 KILOMETER 0.5 0

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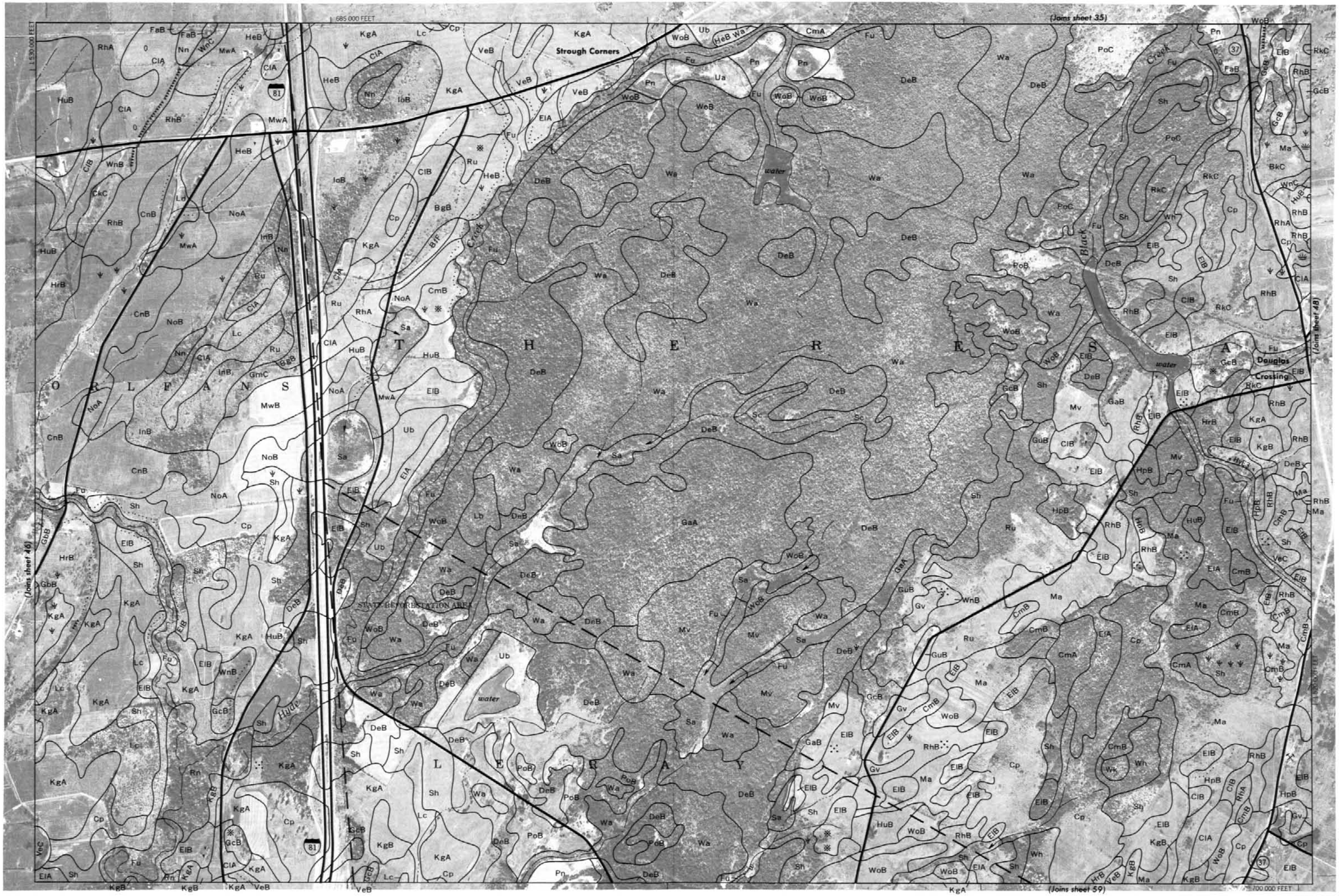

Scale 1:15,840

1 MILE · 3/4 · 1/2 · 1/4 · 0

1 KILOMETER · 0.5 · 0

N

48

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

0 0.5

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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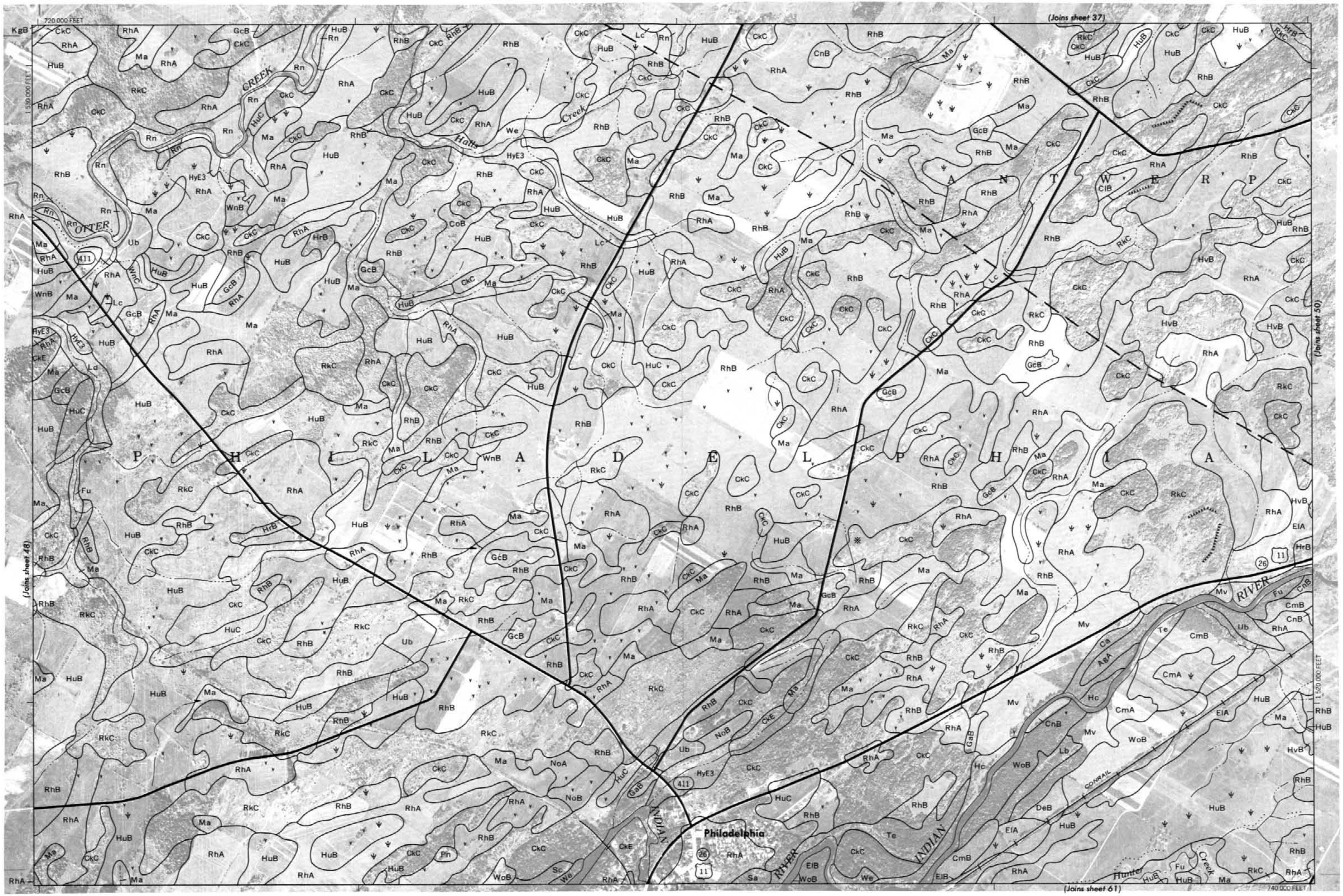
JEFFERSON COUNTY, NEW YORK NO. 48

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

MILE
1
3/4
1/2
1/4
0
KILOMETER
1
0.5
0

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15 840

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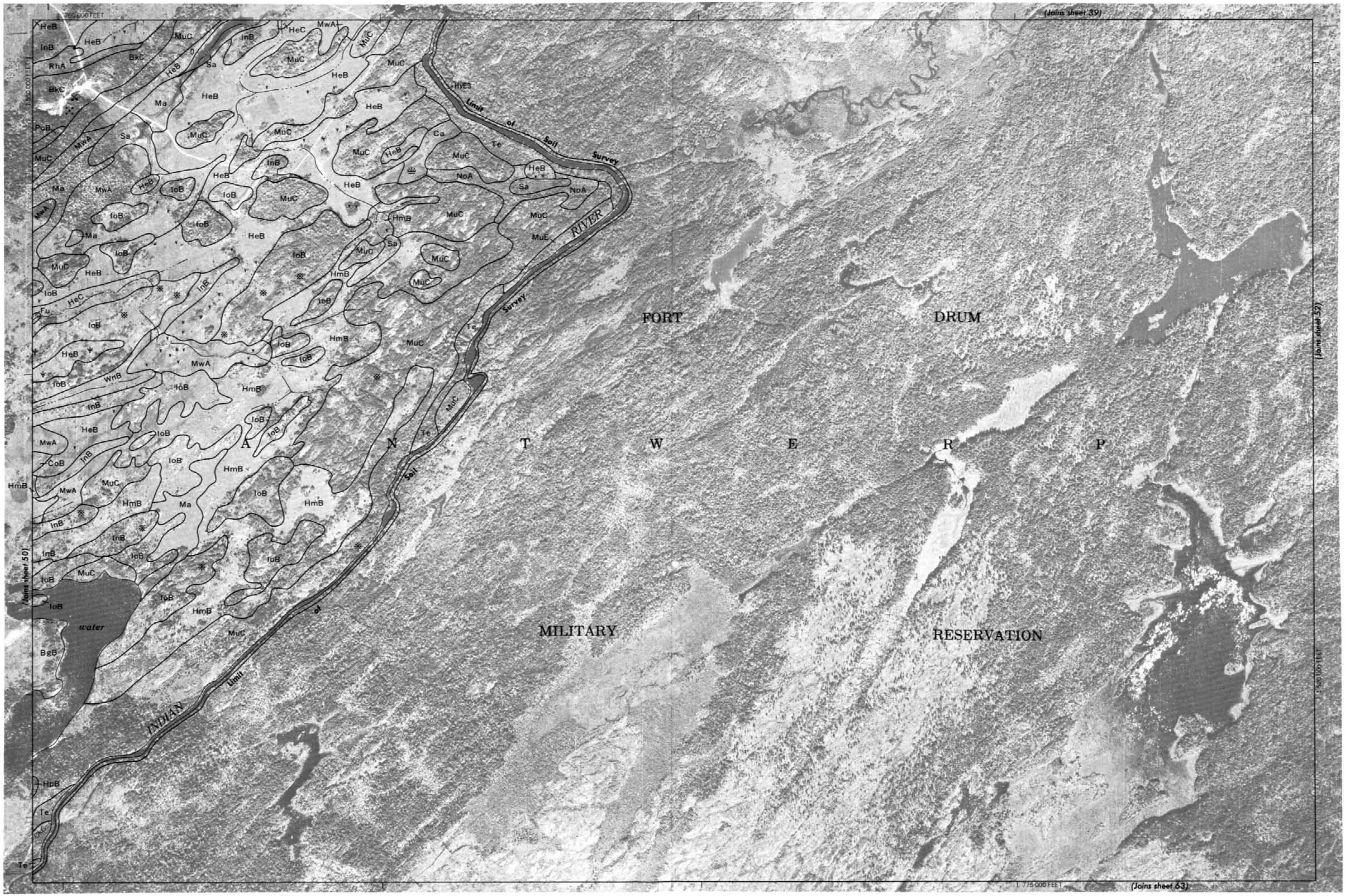


SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

1 MILE
1/4
1/2
3/4
0
1 KILOMETER
0.5
0
N

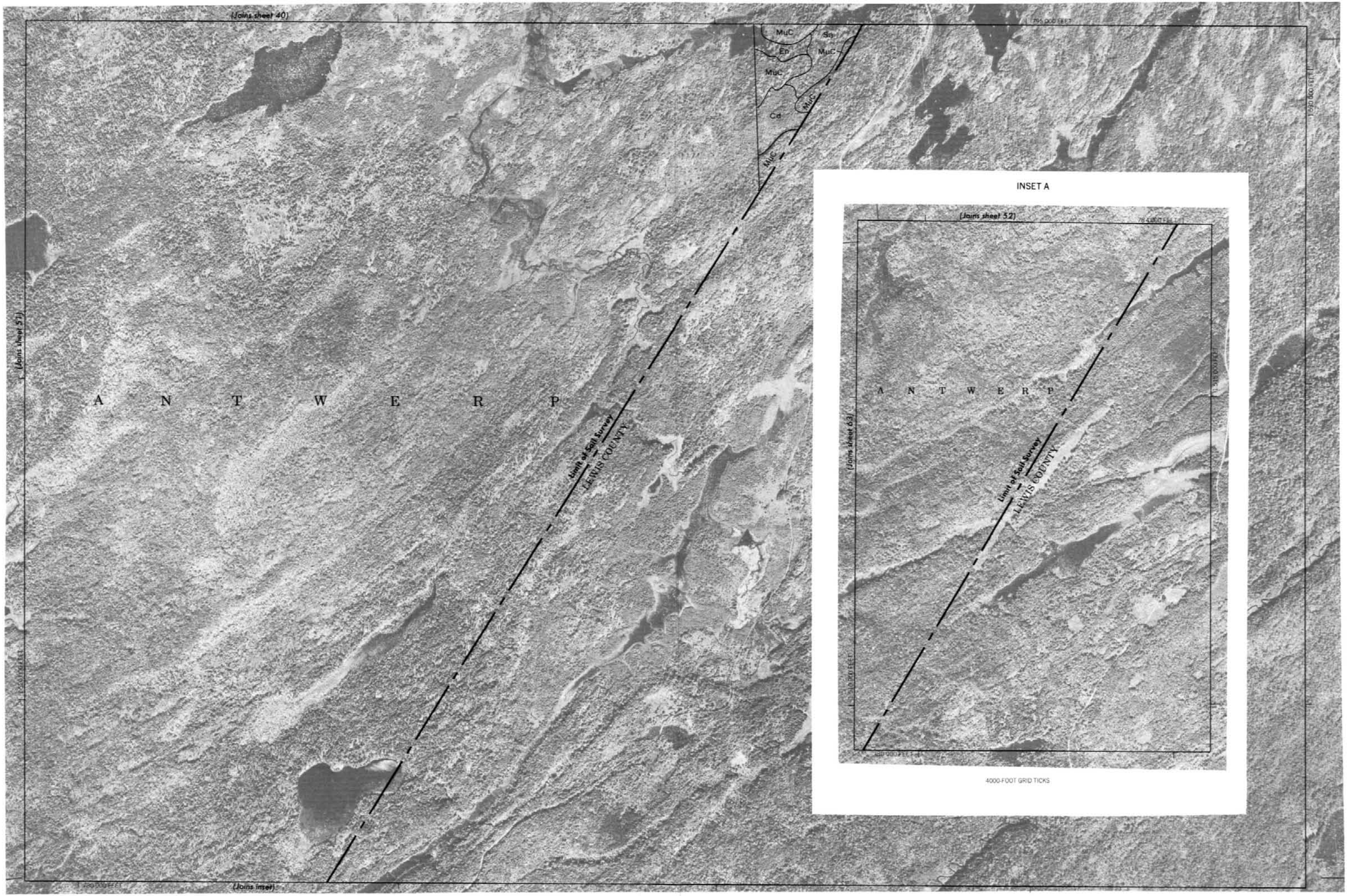
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

1 MILE

1 KILOMETER



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 53

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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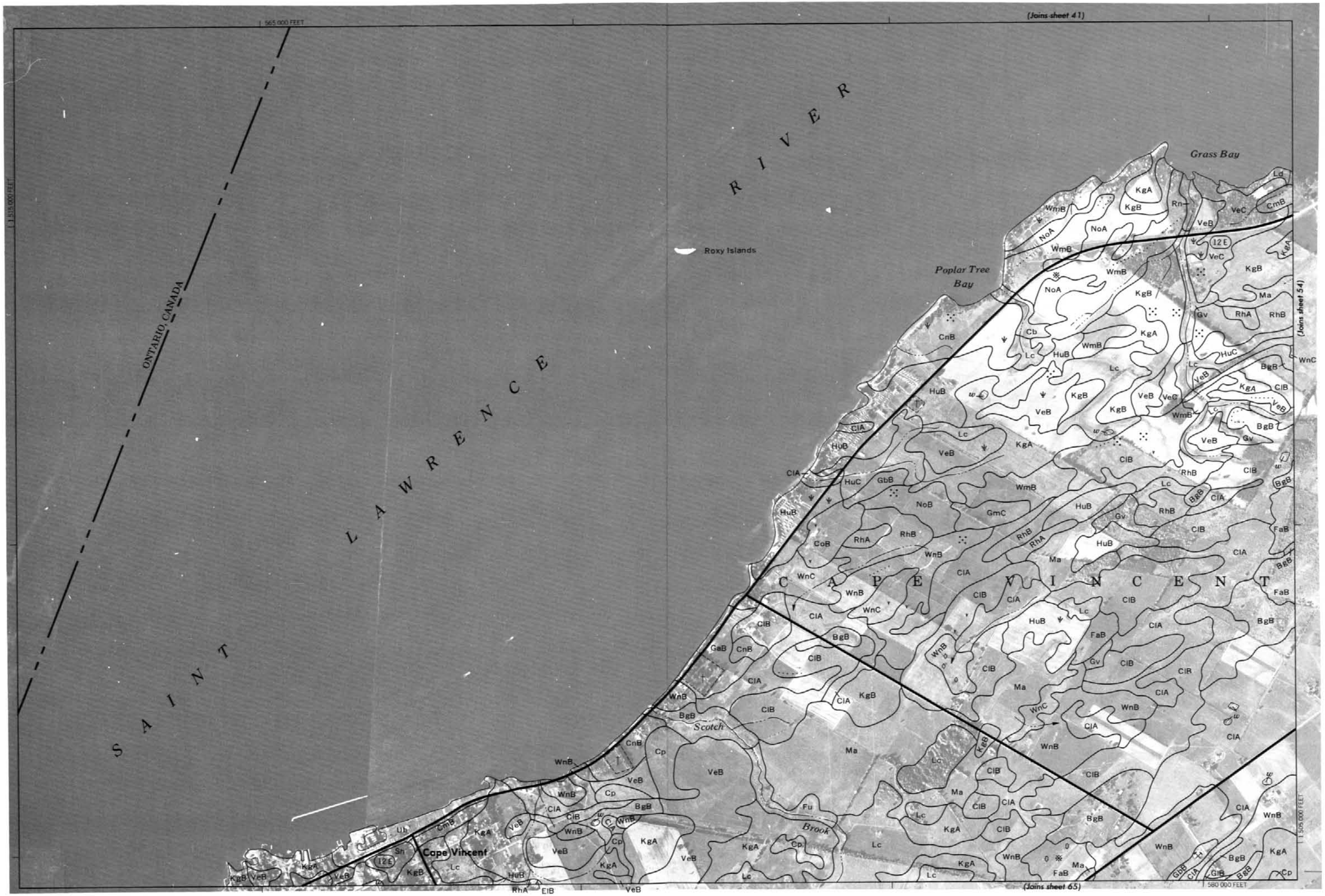

N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0.5

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

0 0.5

Scale 1:15,840

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 55

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

55

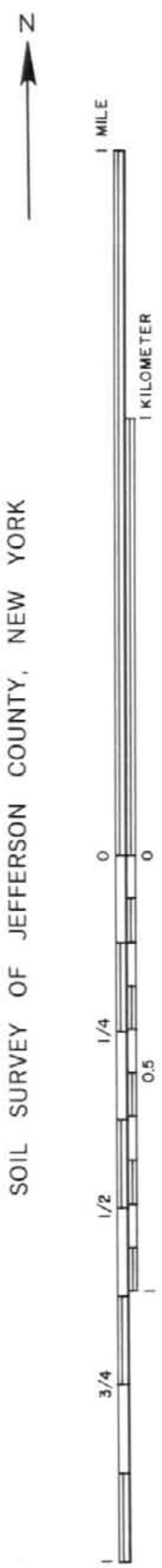
N

1 MILE

1 KILOMETER

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0.5

Scale 1:15 840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 57

N

1 3/4 1/2 1/4 0 1 MILE

1 0.5 0 1 KILOMETER

Scale 1:15,840

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

59

N

MILE
0
1/4
1/2
3/4
1
KILOMETER
0
0.5
1

Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Scale 1:15,840

1 MILE

1 KILOMETER

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

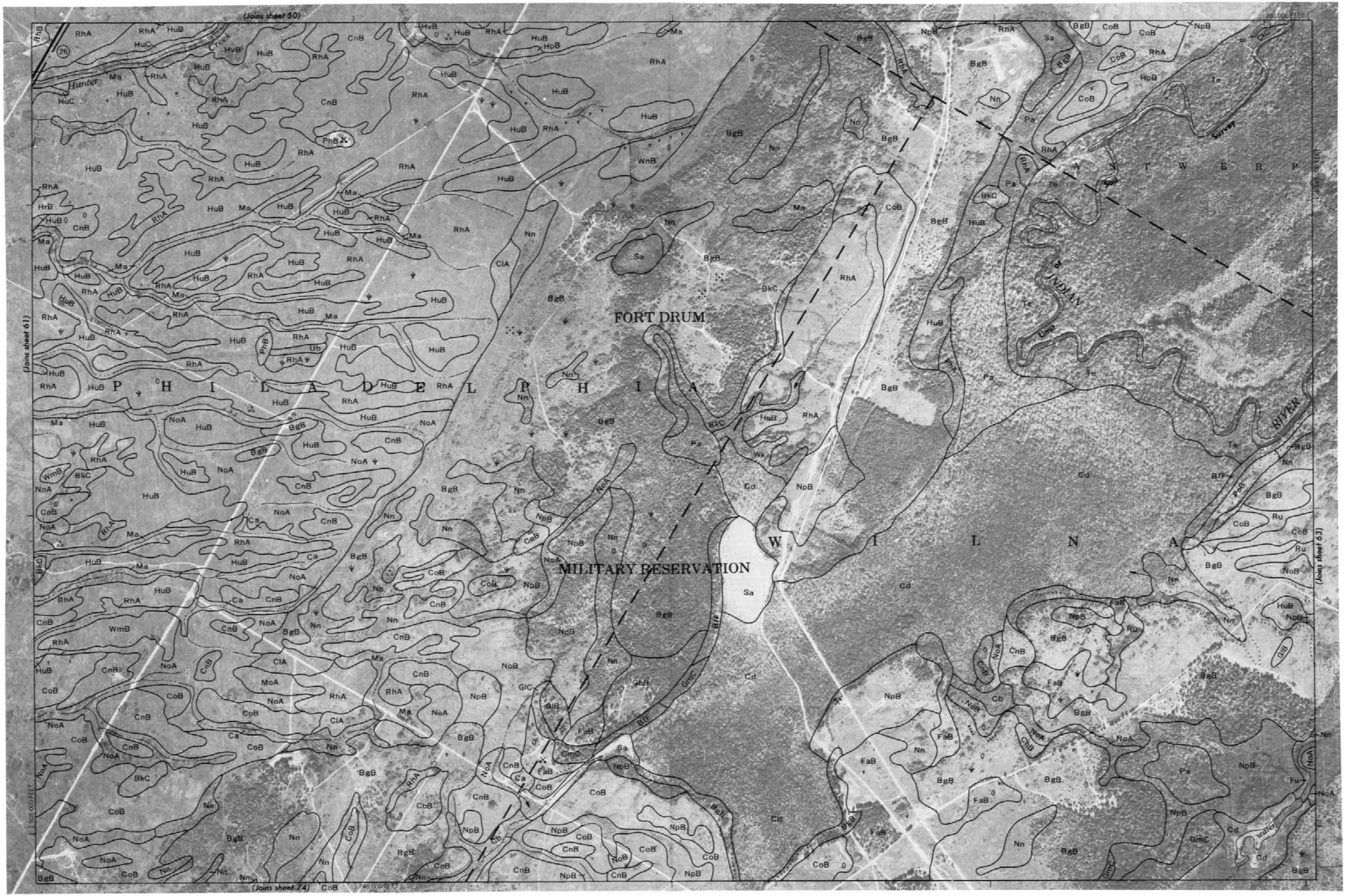
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE

1 KILOMETER

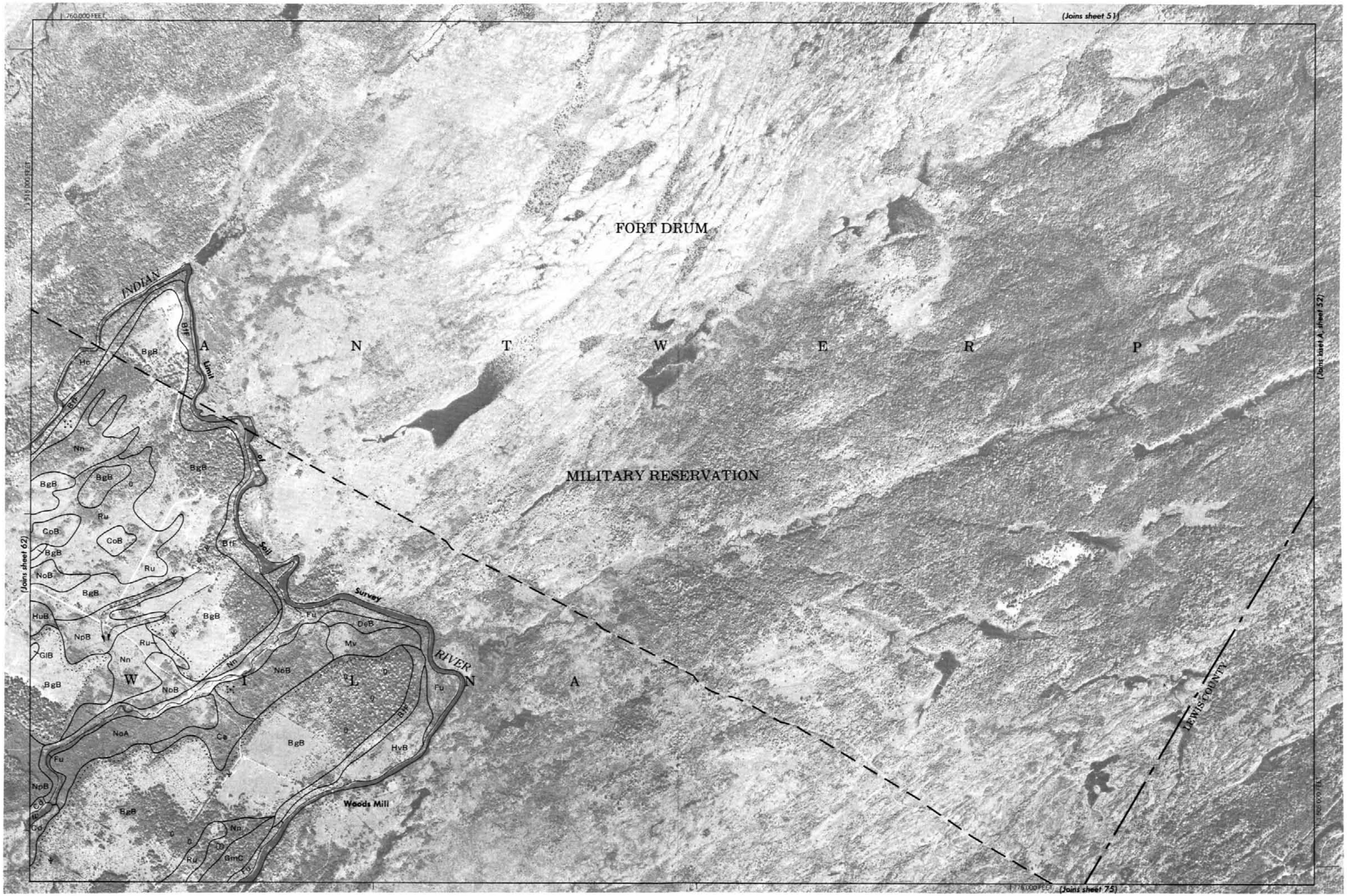
Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 63

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



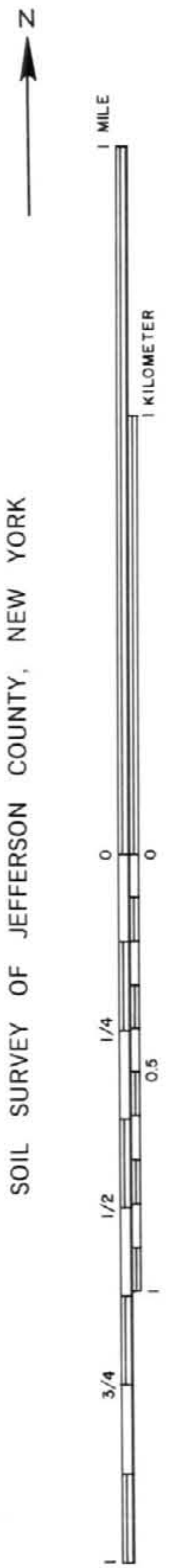
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

1 MILE
0 1/4 1/2 3/4 1
1 KILOMETER
0 0.5 1

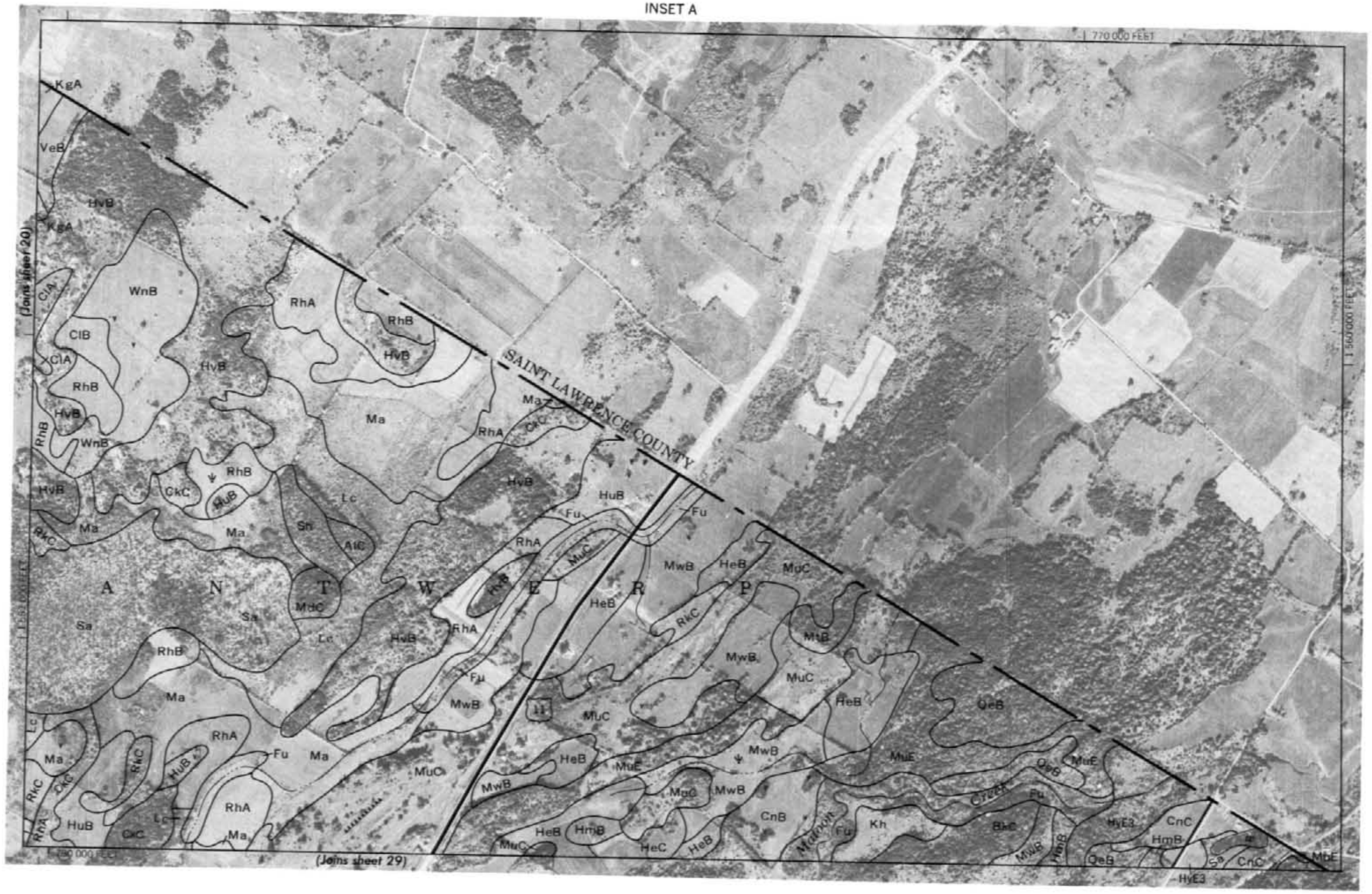
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

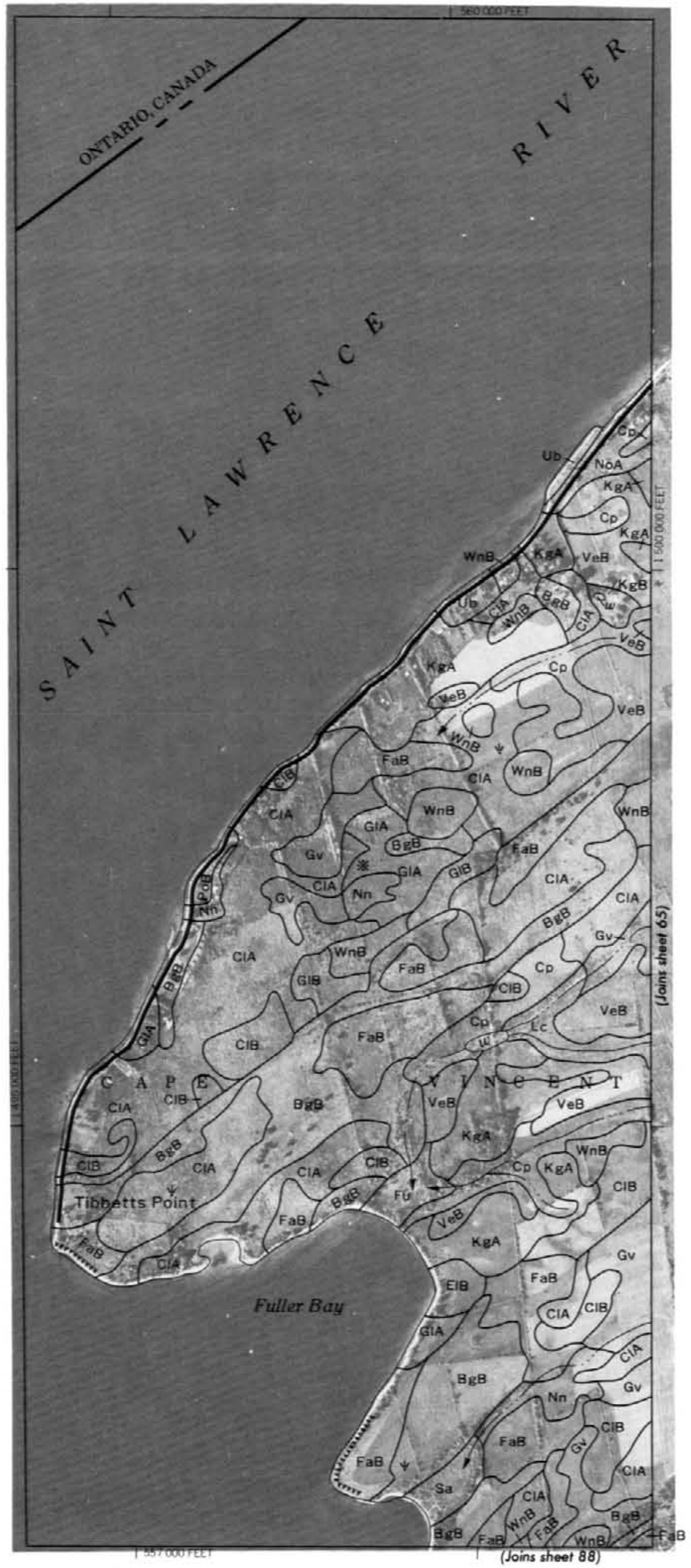


Scale 1:15,840

INSET A



3000 AND 5000-FOOT GRID TICKS



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N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

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N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE
1 KILOMETER
0 1/4 0.5 1/2 3/4 1
Scale 1:15 840

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N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5

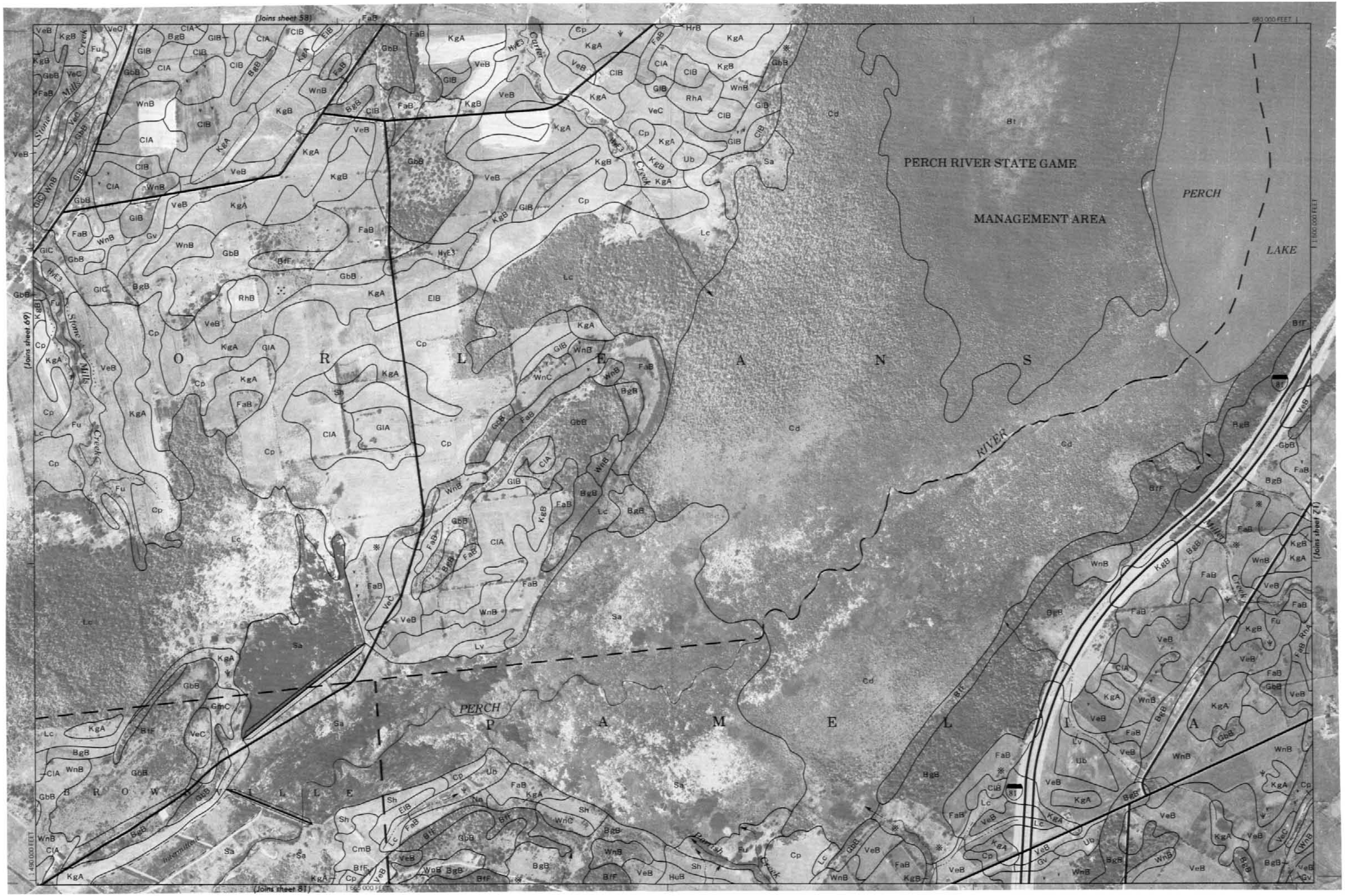
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4
0 0.5
Scale 1:15,840



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1 3/4 1/2 1/4 0 1 MILE

1 0.5 0 1 KILOMETER

Scale 1:15,840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15 840

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

0 0.5 1

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 73

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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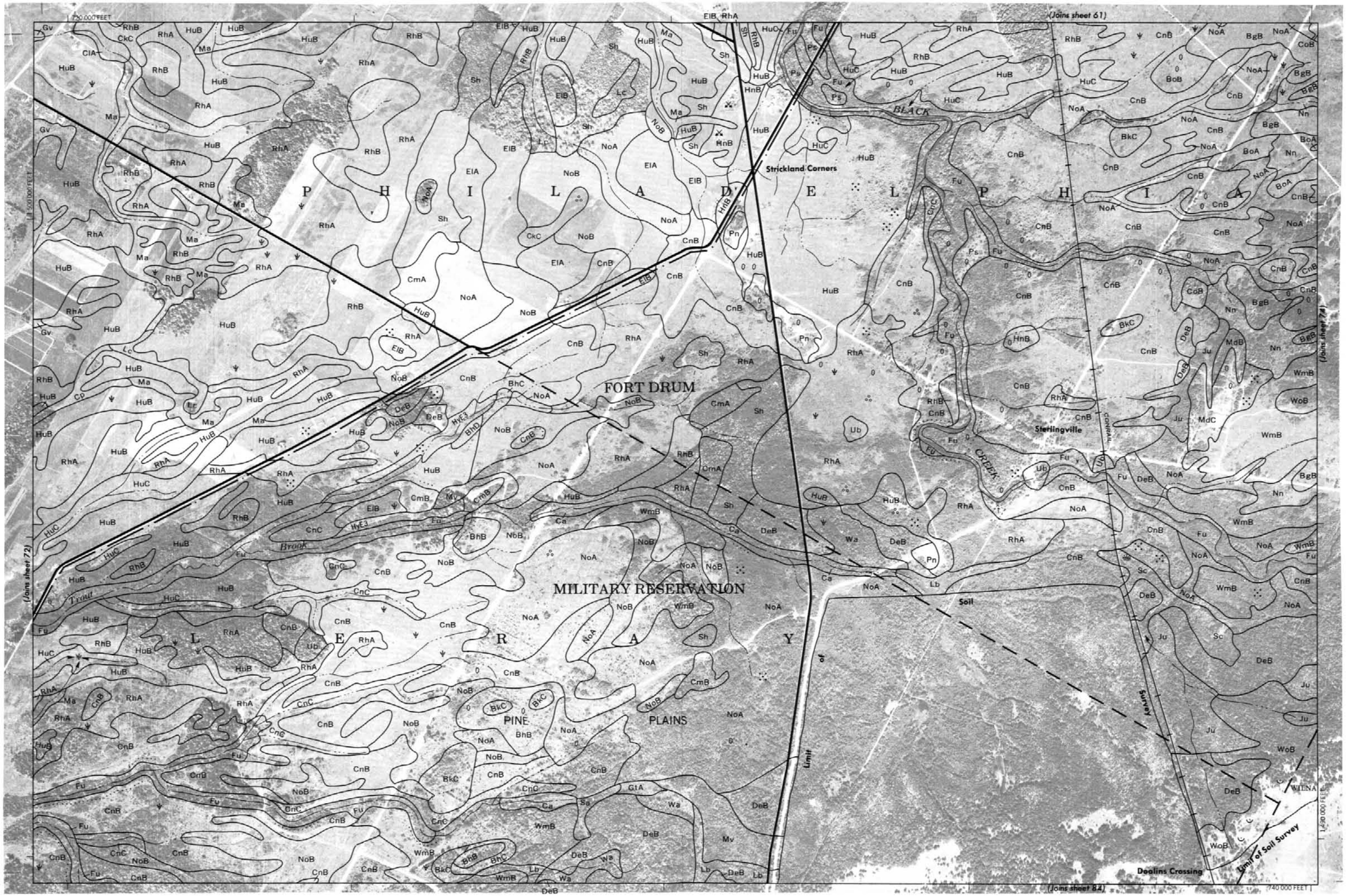


Scale 1:15 840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE

KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

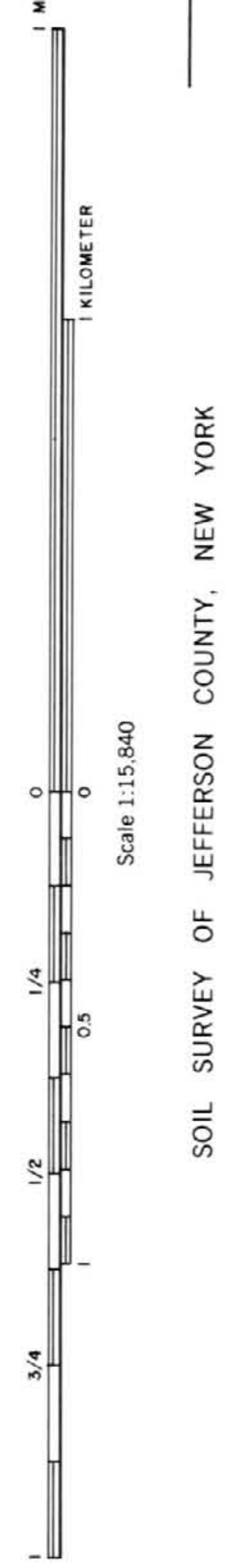
Scale 1:15,840

JEFFERSON COUNTY, NEW YORK NO. 74

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

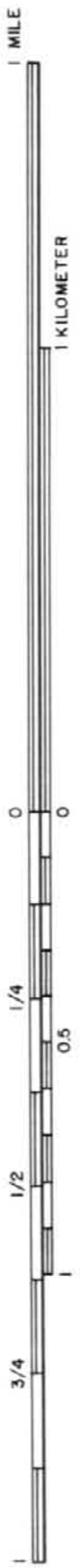
JEFFERSON COUNTY, NEW YORK NO. 75

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

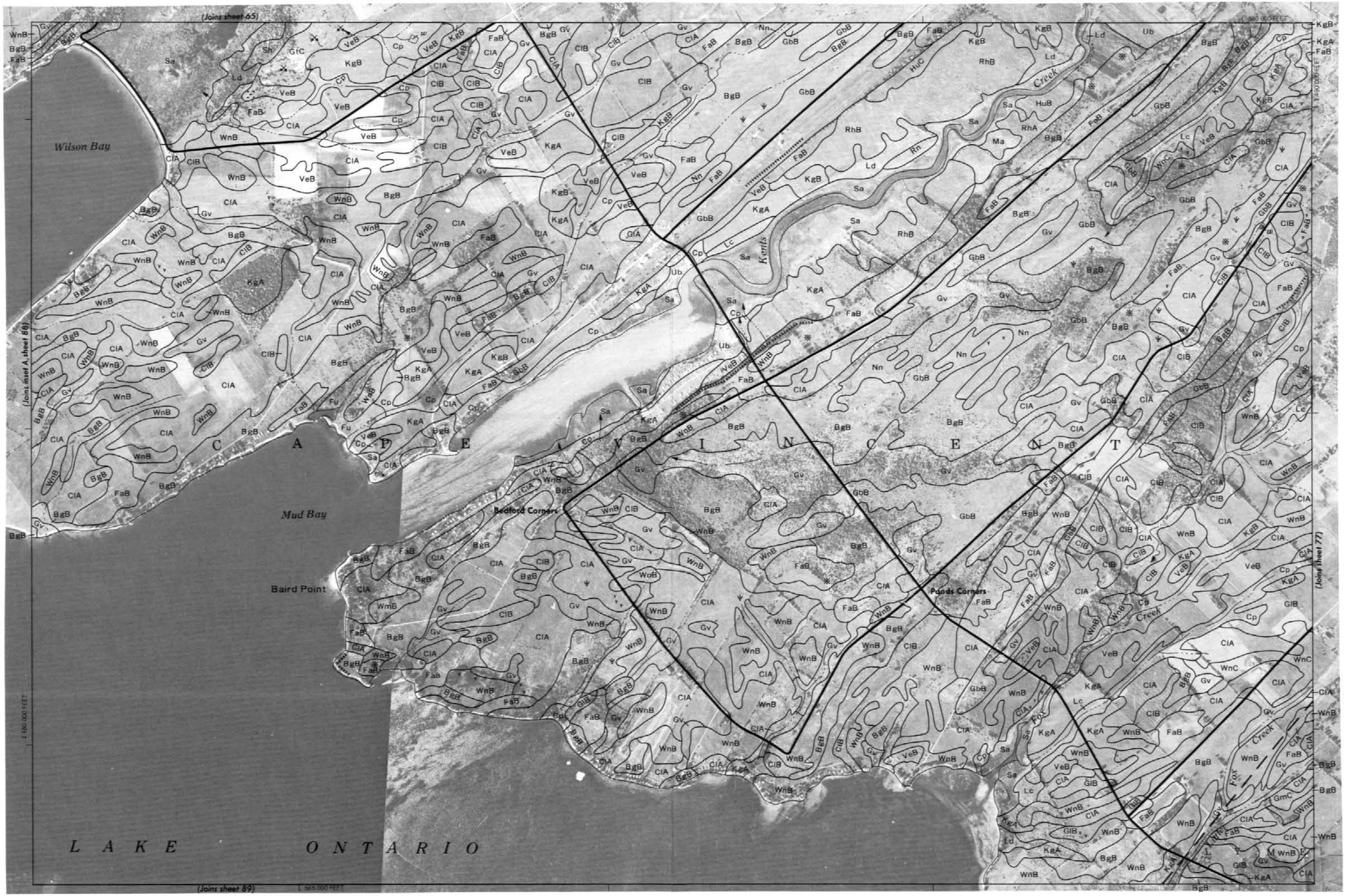


SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N



Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

JEFFERSON COUNTY, NEW YORK NO. 77

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Scale 1:15 840

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

0 0.5

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

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SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15 840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

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Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0
1/4
0.5
1/2
1
3/4
1

Scale 1:15,840

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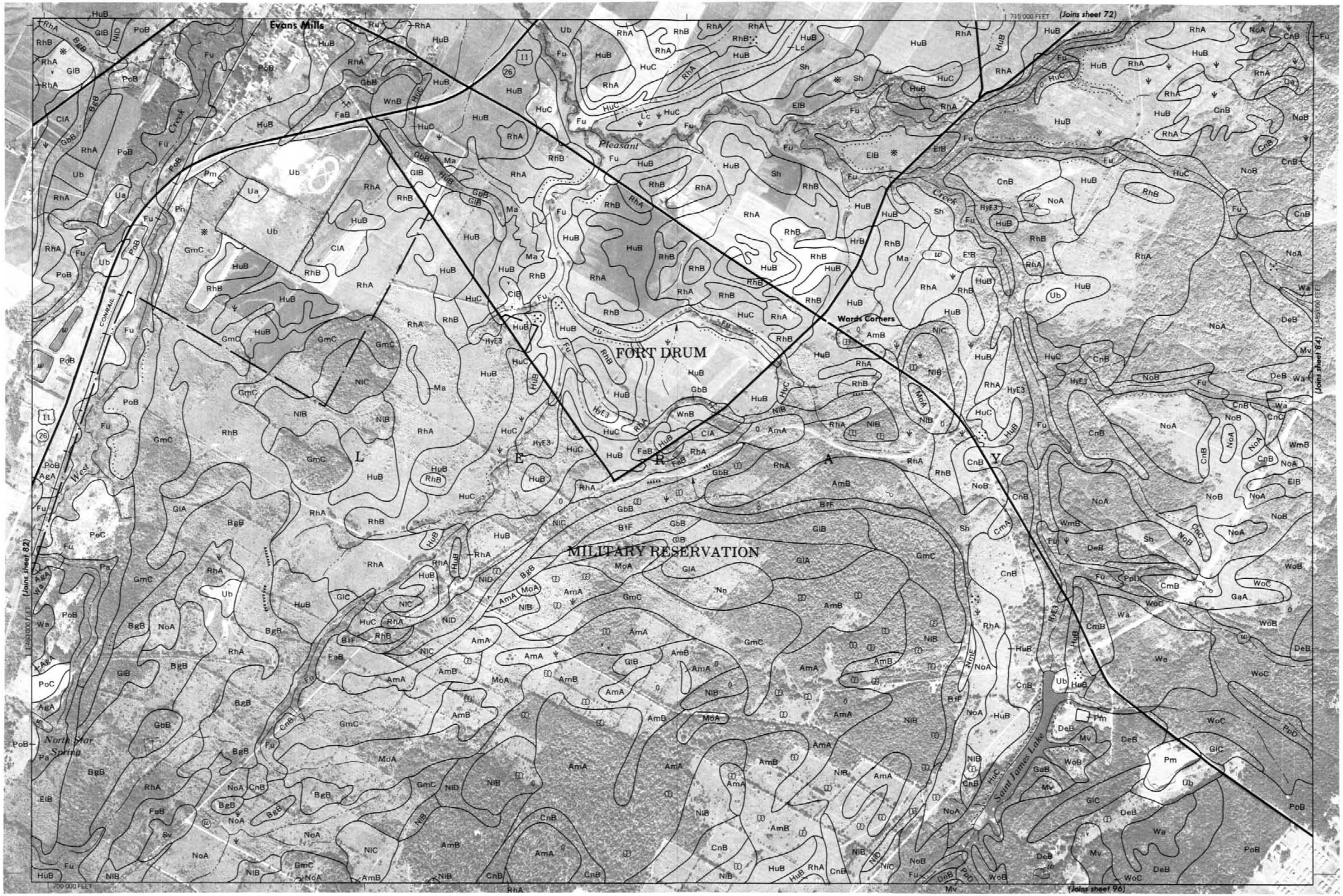


N

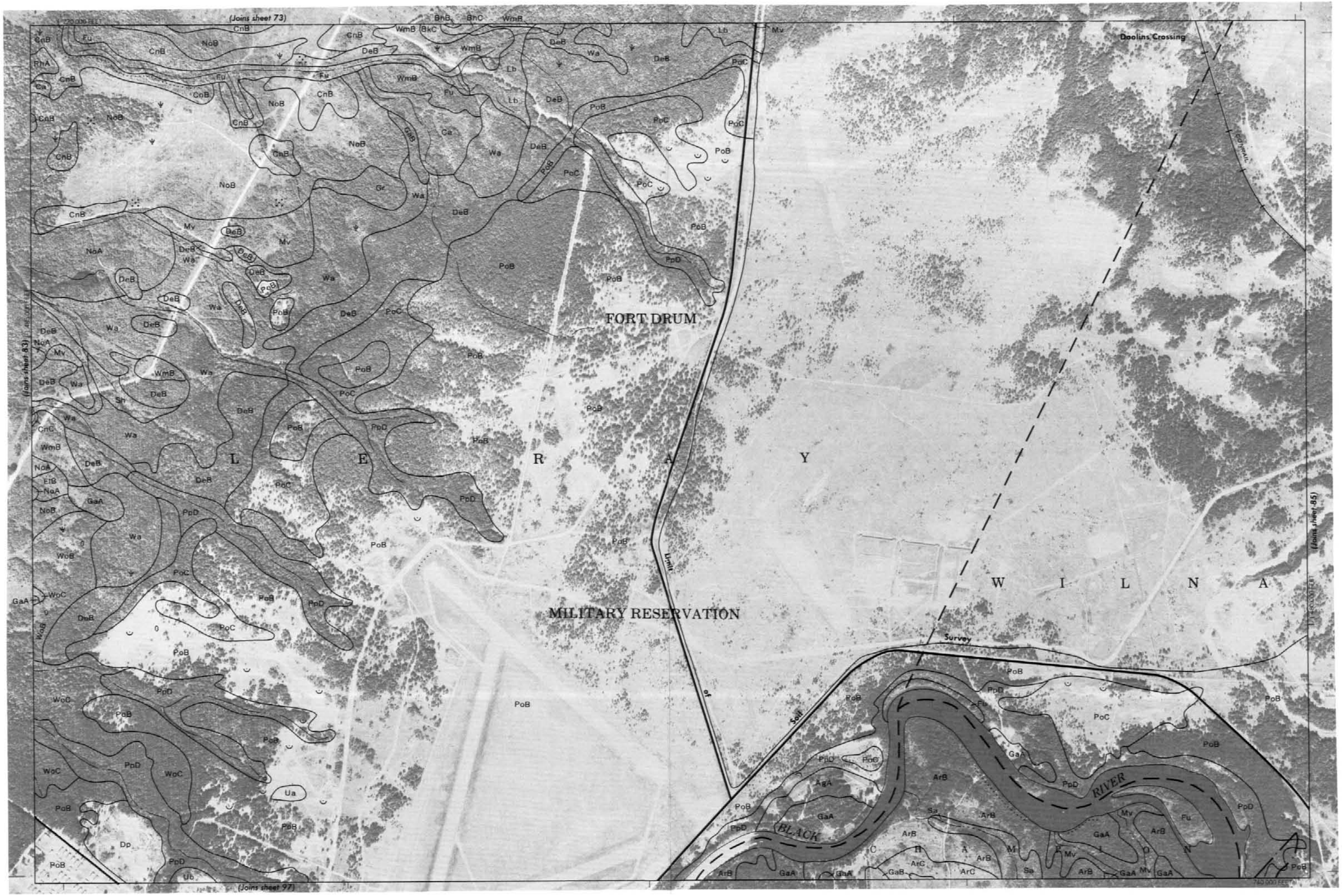
1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

N

1 MILE

1 KILOMETER

Scale 1:15,840



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N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

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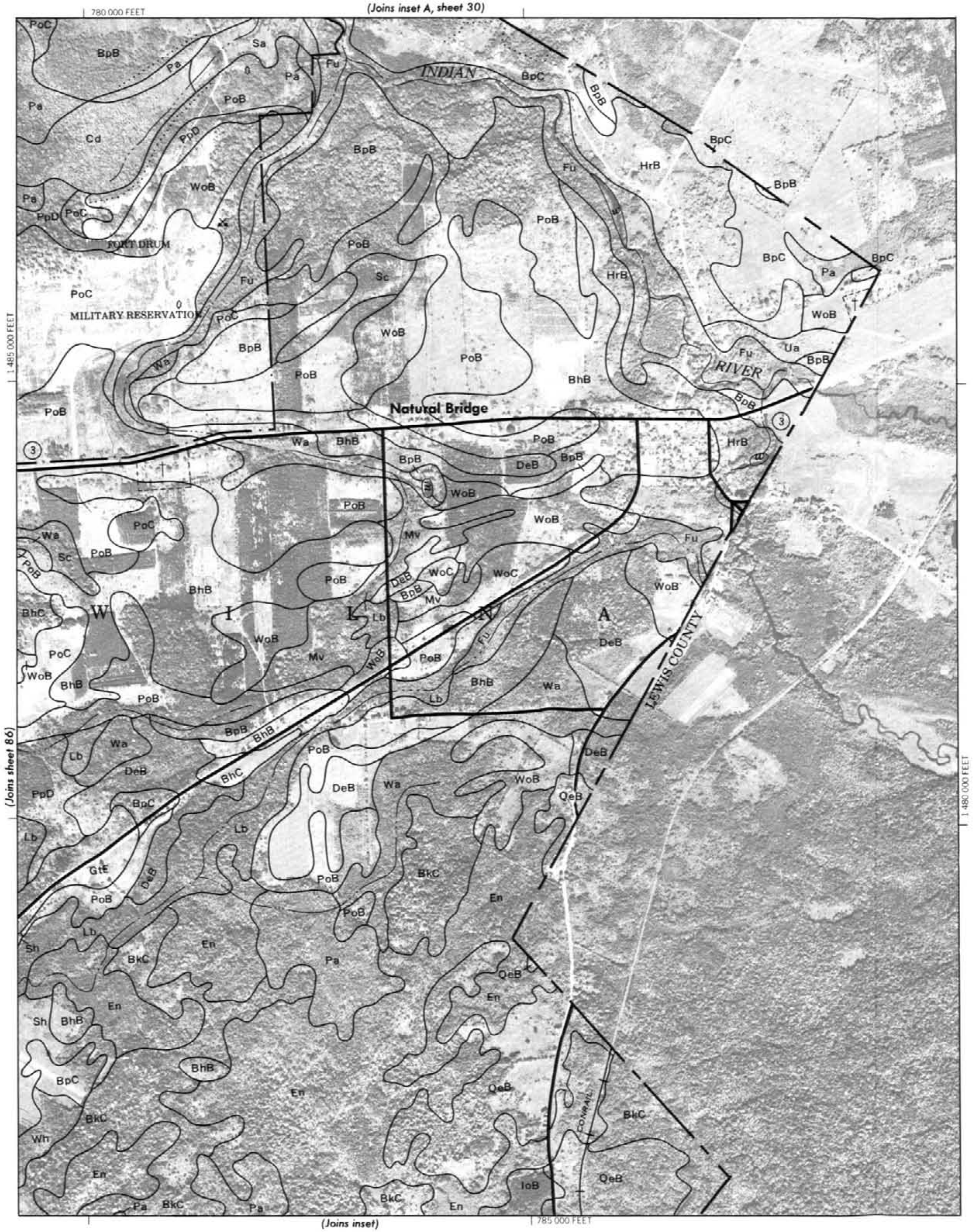
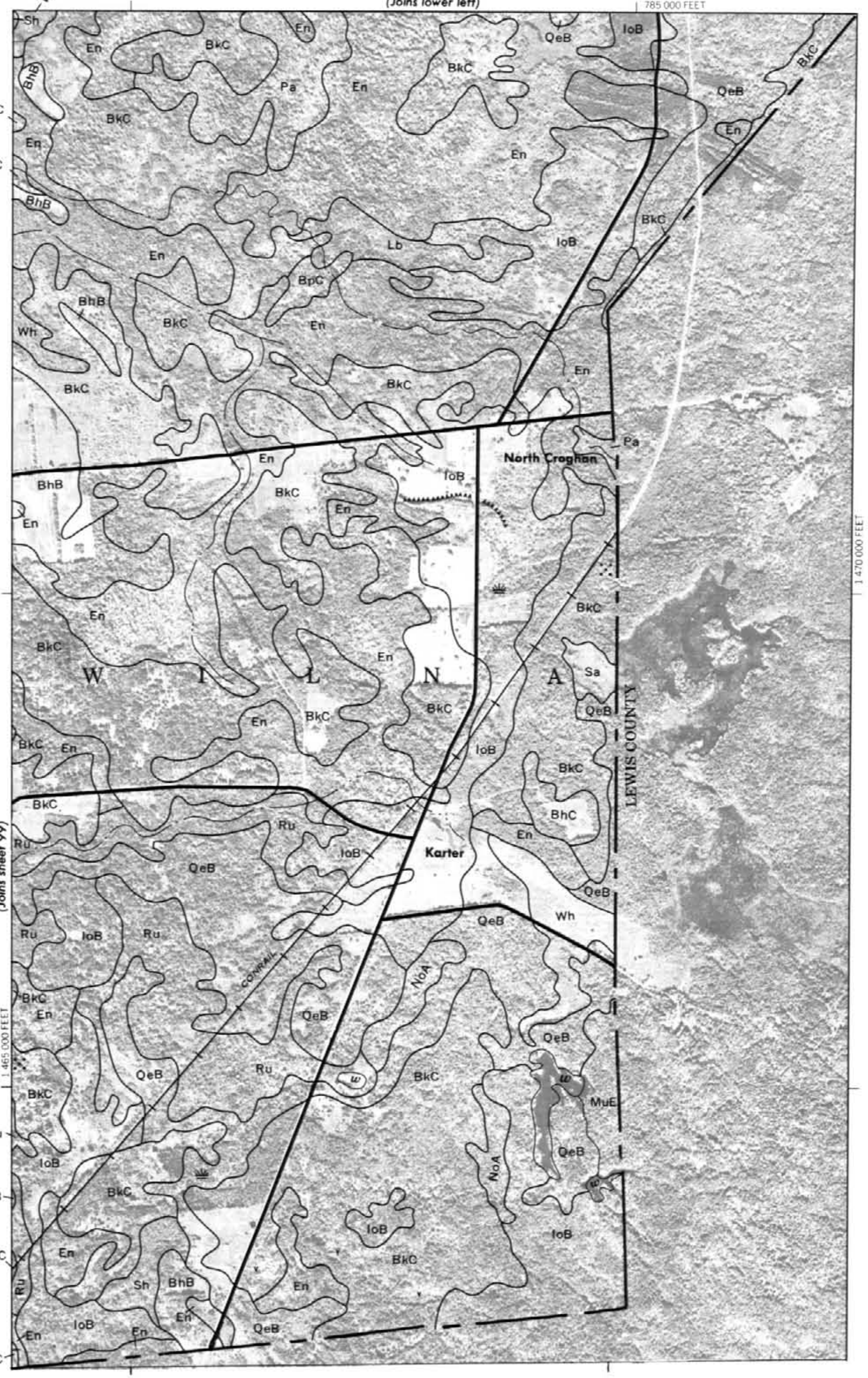


INSET A



N

MILE
KILOMETER
0
1/4
0.5
1/2
3/4
1

Scale 1:15,840

N

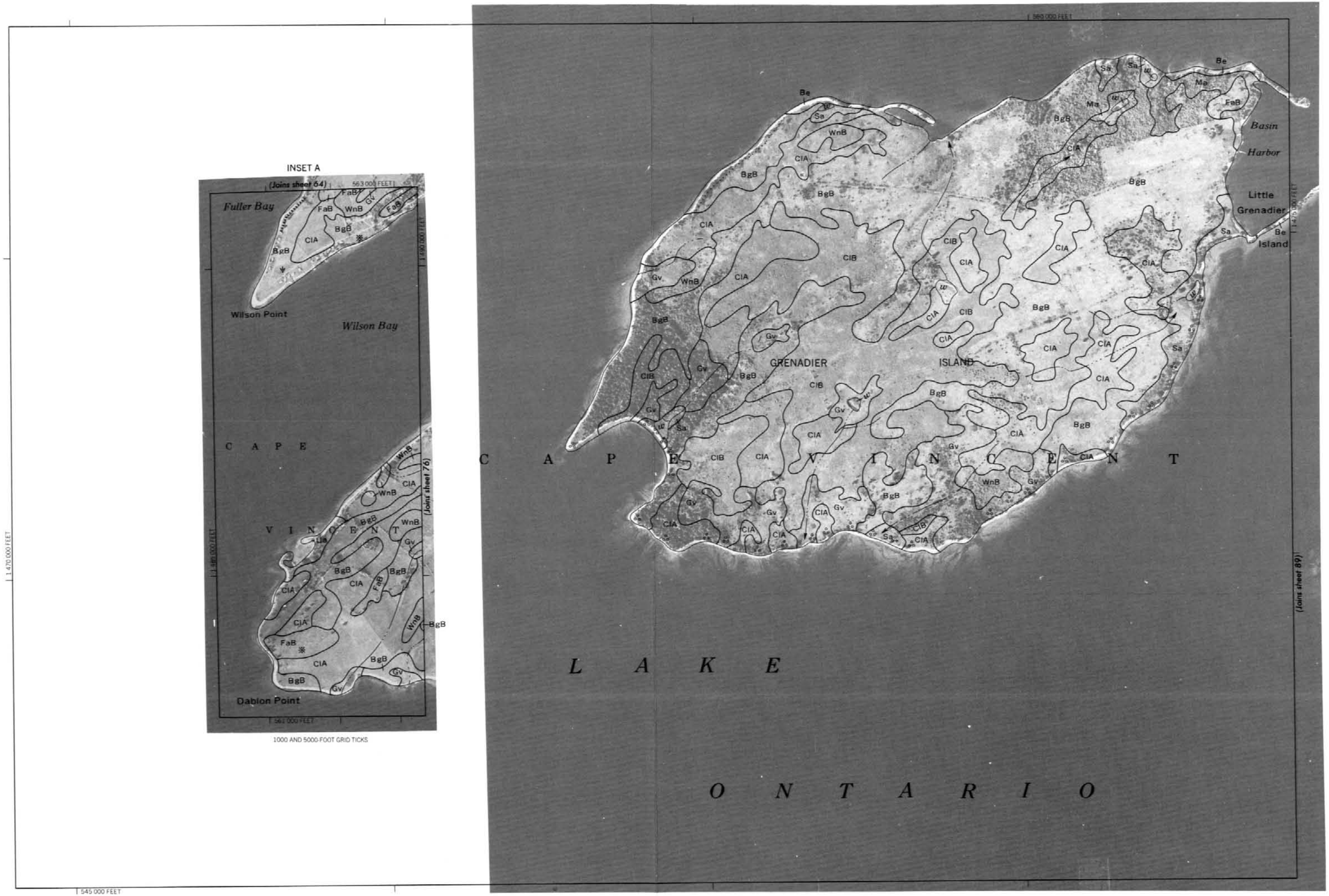
MILE

KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840



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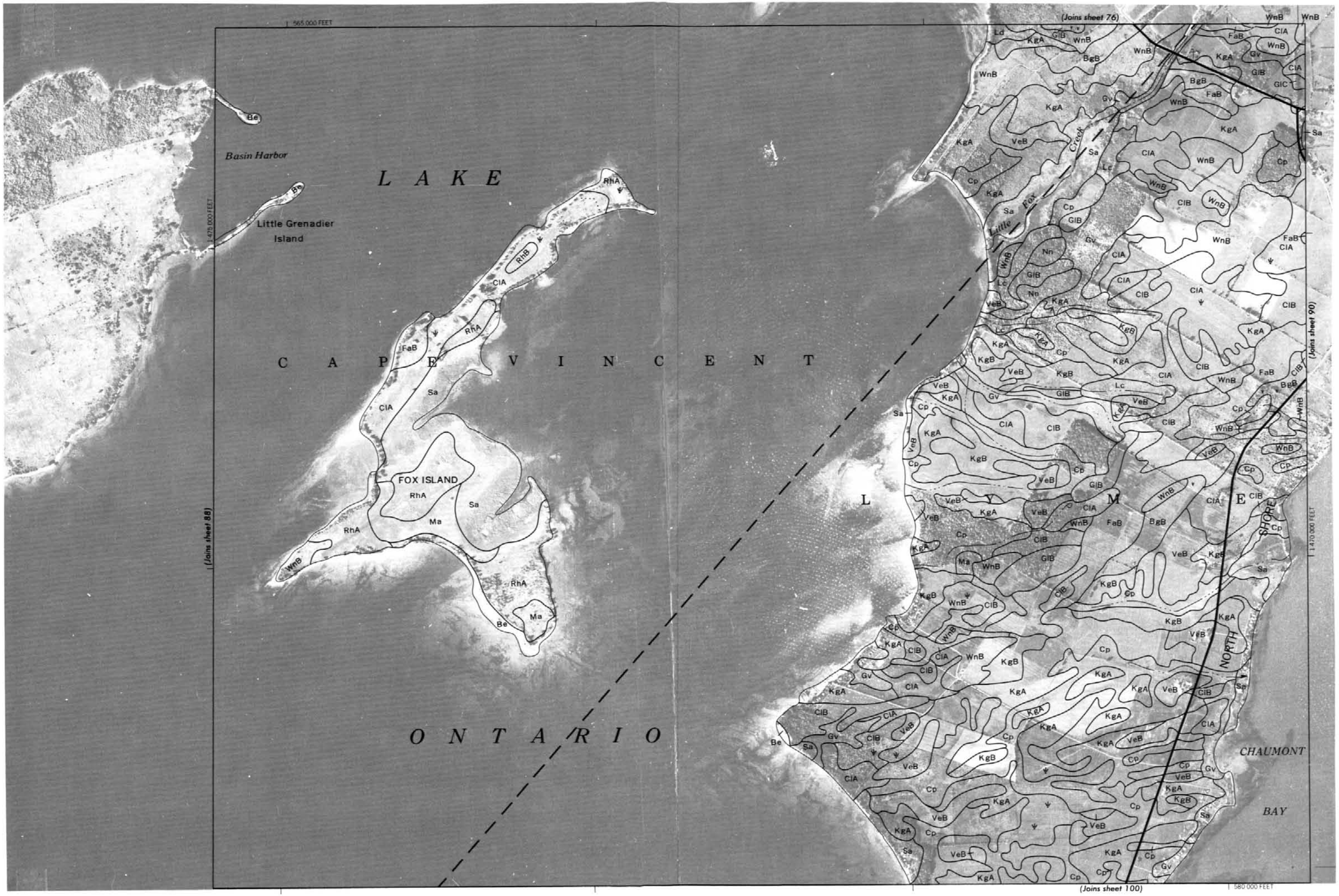
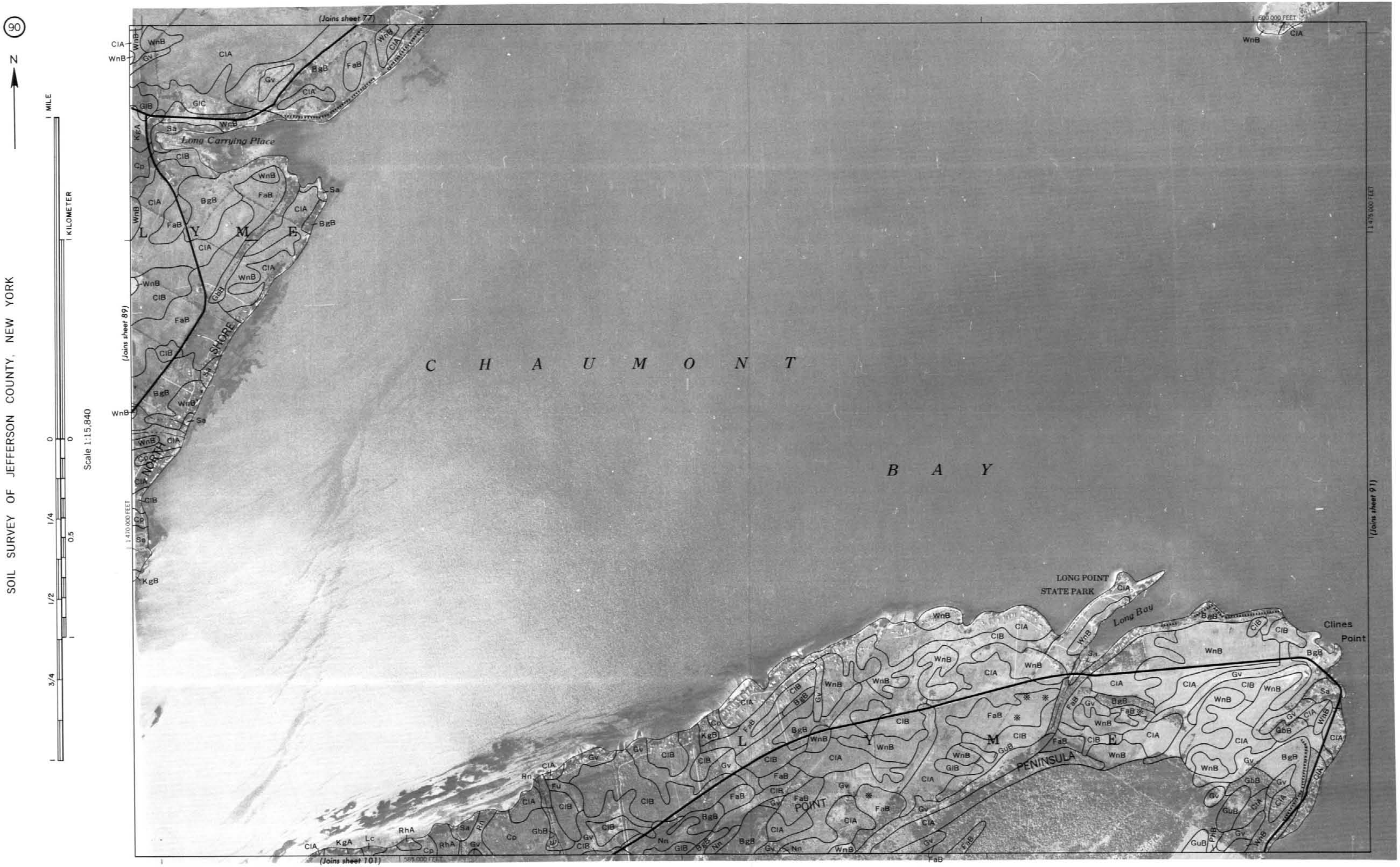
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



1 MILE
1 KILOMETER
0
1/4
0.5
1/2
3/4
Scale 1:15,840

N

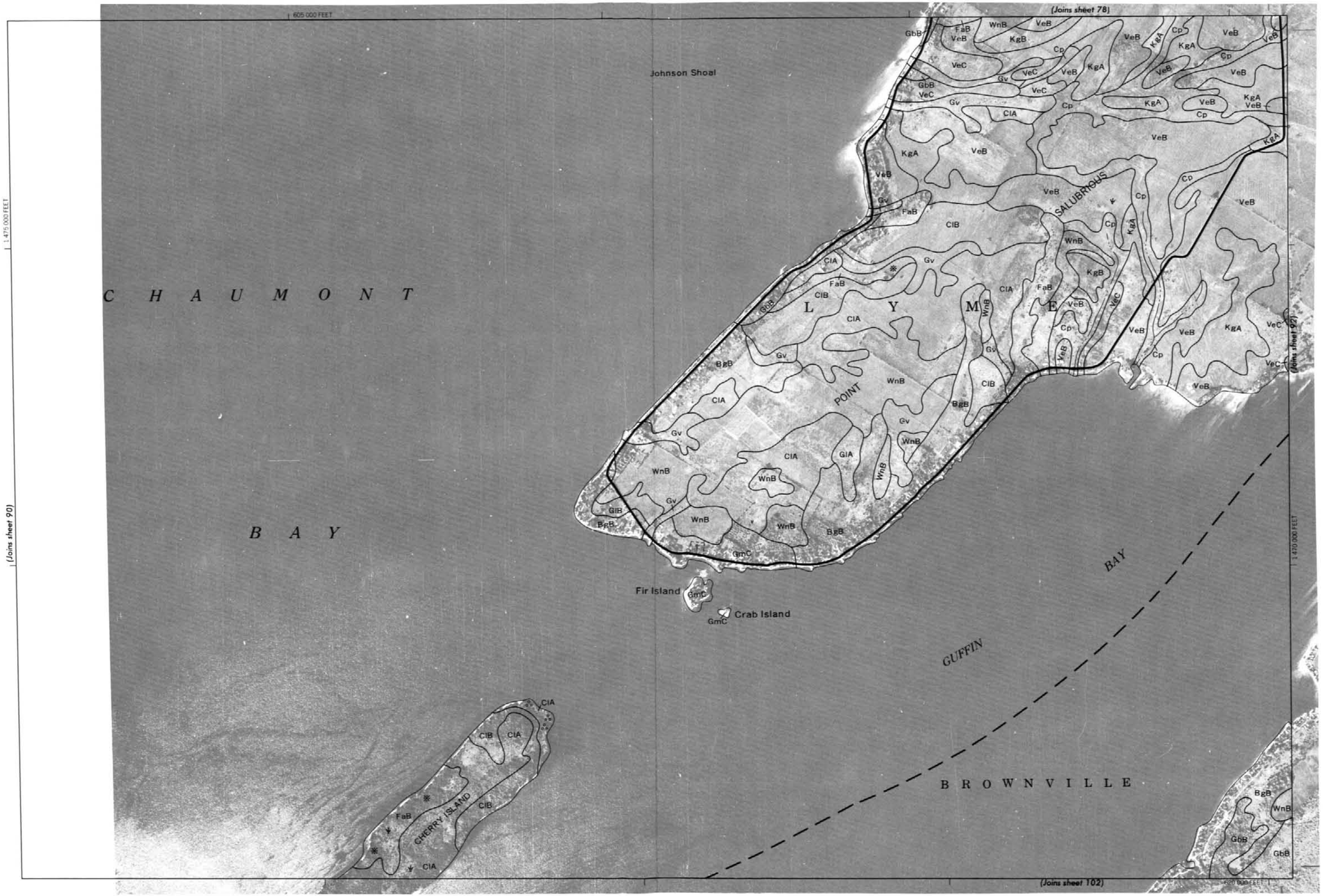
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 91

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

(91)

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

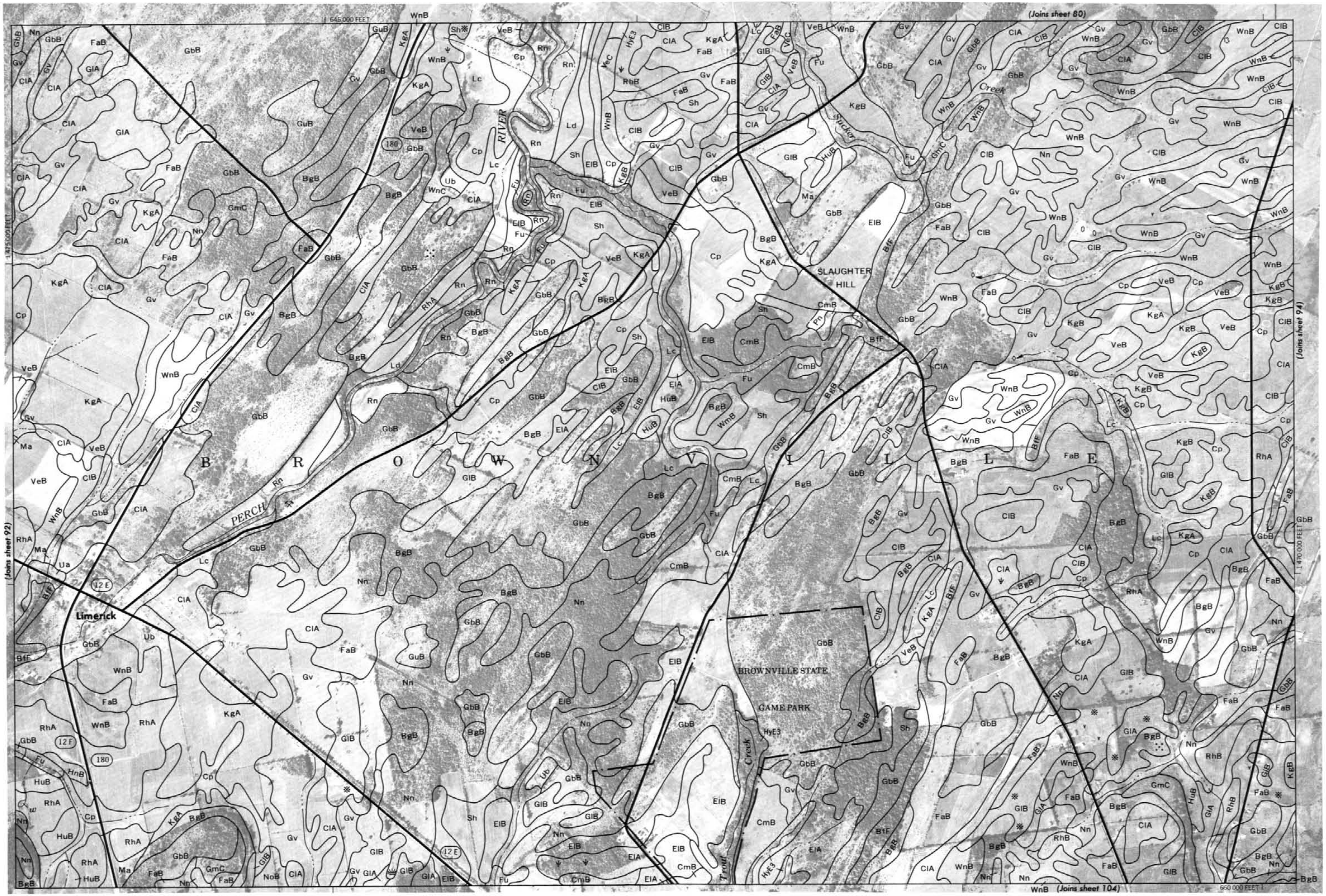
1 MILE

1 KILOMETER

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



93

N

1 MILE

1 KILOMETER

Scale 1:15 840

0 1/4 1/2 3/4 1

0 0.5 1

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4
0 0.5 1

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

Scale 1:15,840

0 1/4 1/2 3/4 1

0 0.5 1

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Scale 1:15,840

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

JEFFERSON COUNTY, NEW YORK NO. 97

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(98)

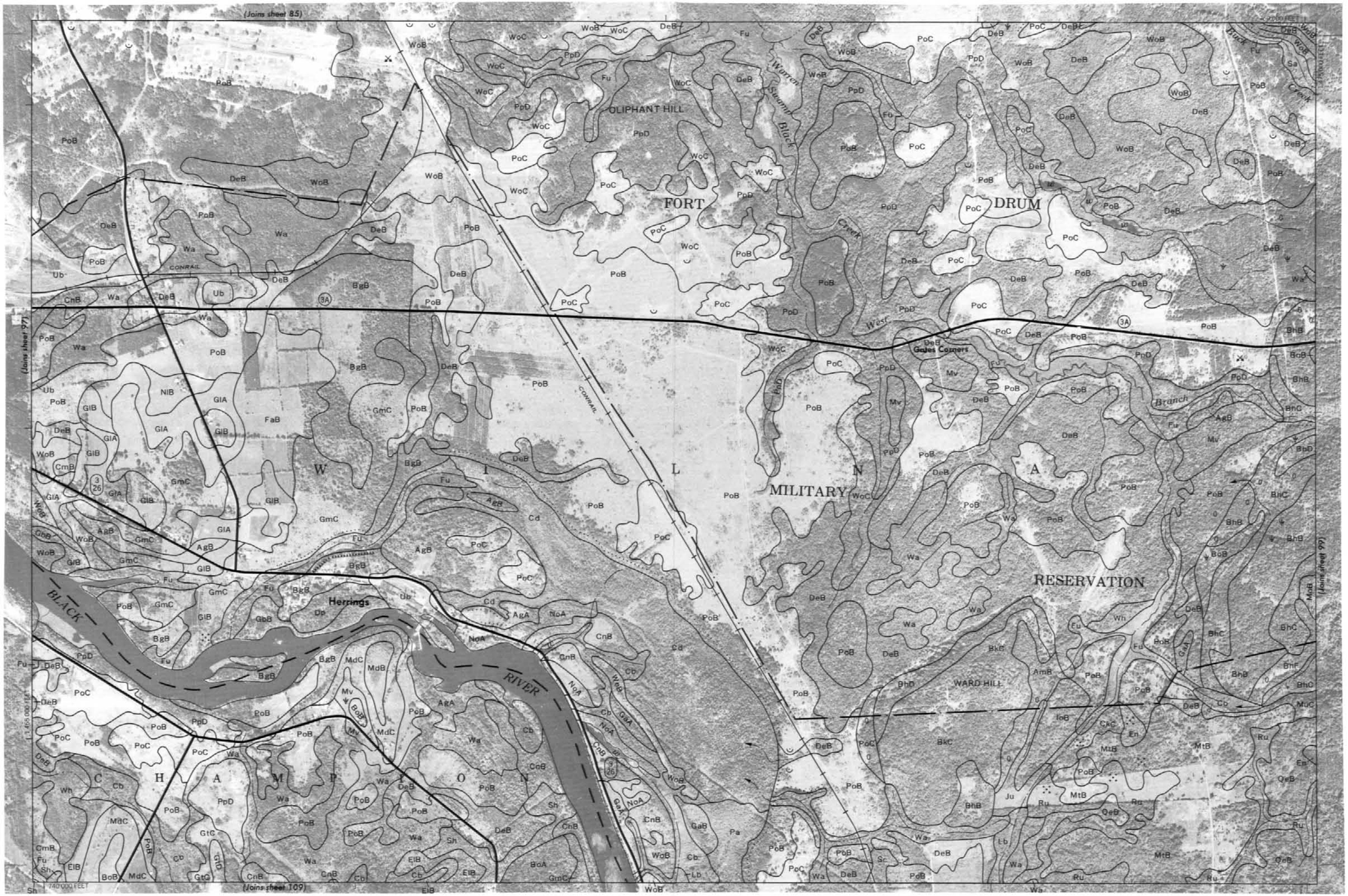
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

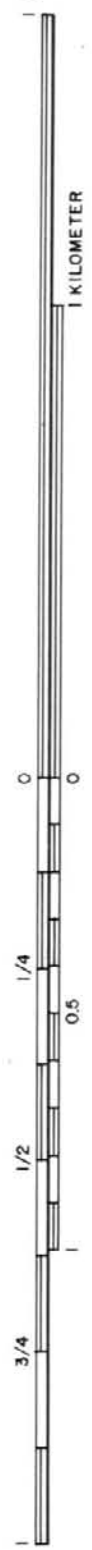
MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15 840

INSET A

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

JEFFERSON COUNTY, NEW YORK NO. 101

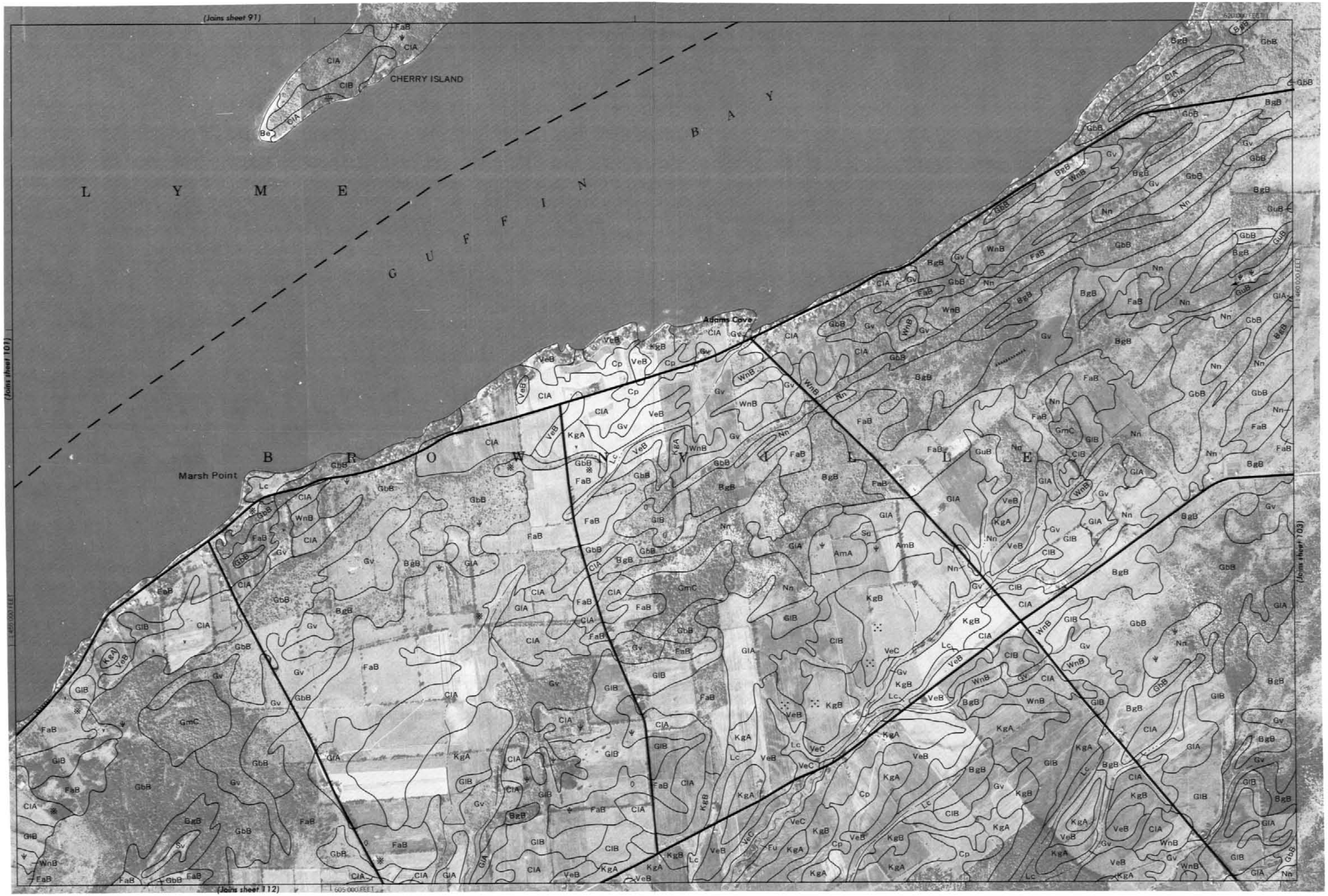
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

102

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE
1 KILOMETER
0 1/4 1/2 3/4
0 0.5
Scale 1:15 840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 MILE
1/4 1/2 3/4
0
1 KILOMETER
0 0.5 1
Scale 1:15,840

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

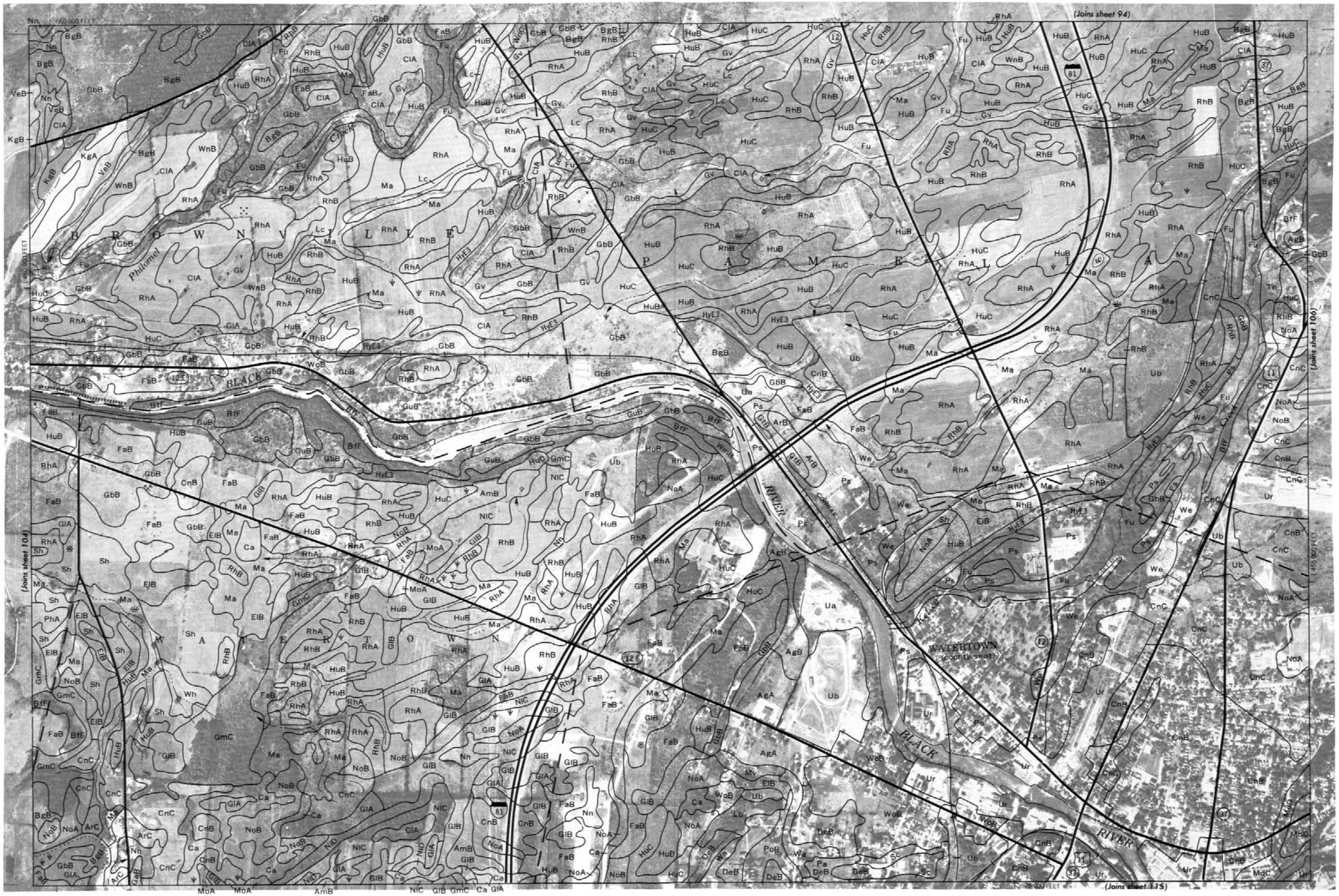
0 0.5

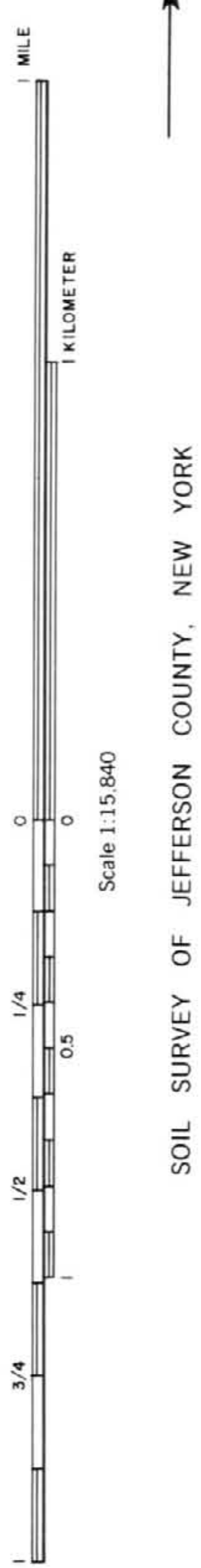
Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 105

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.





Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

106

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

1 MILE
3/4
1/2
1/4
0

1 KILOMETER
0.5
0

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 106

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

JEFFERSON COUNTY, NEW YORK NO. 107

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

Scale 1:15 840

0 1/4 1/2 3/4 1

0 0.5 1

N

1 MILE — 3/4 — 1/2 — 1/4 — 0

1 KILOMETER — 1 — 0.5 — 0

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

N

MILE

KILOMETER

0 1/4 1/2 3/4 1

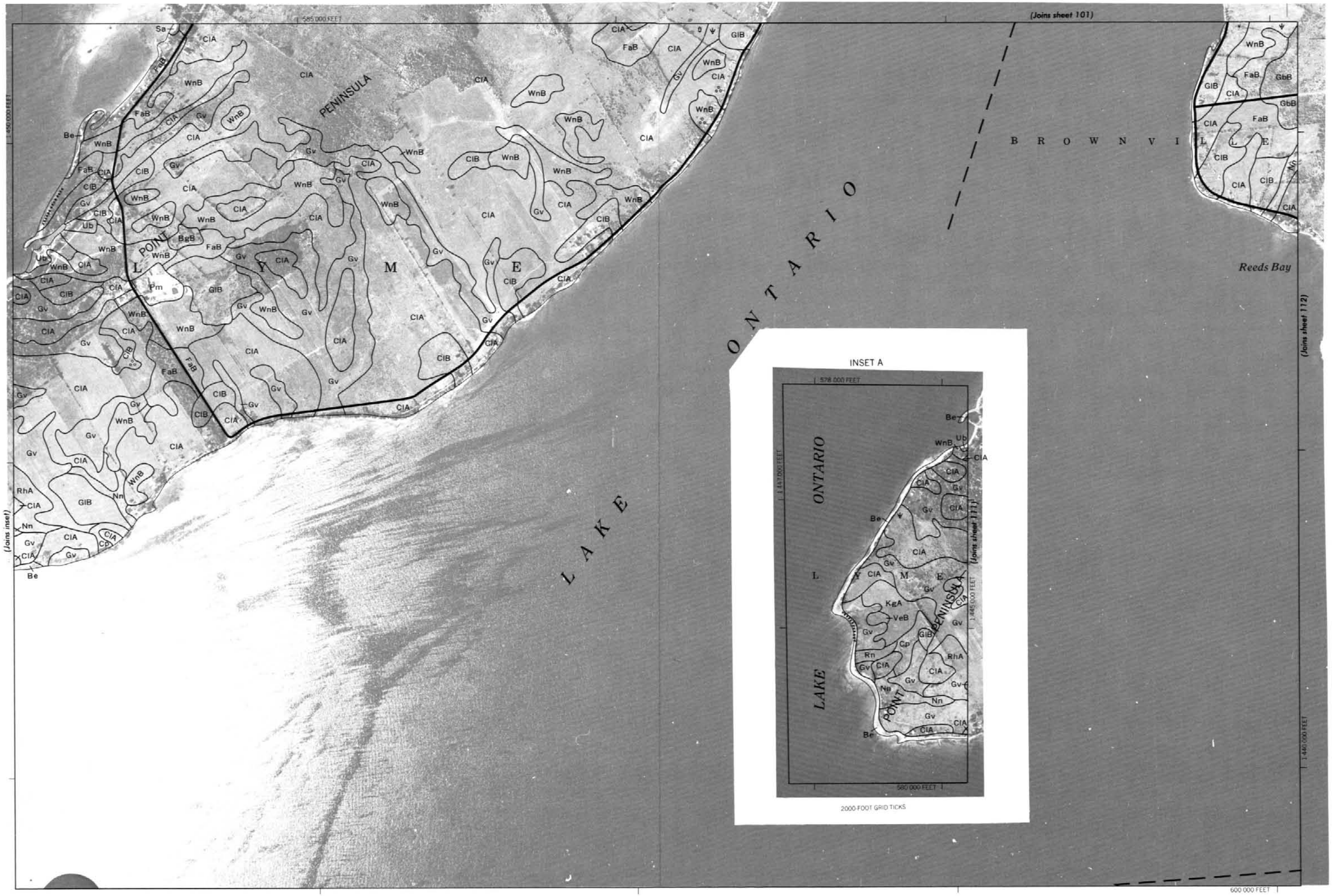
0 0.5 1

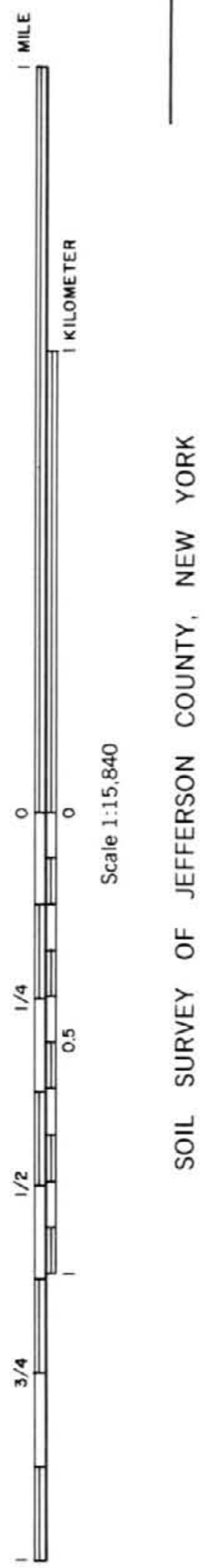
Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.





Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

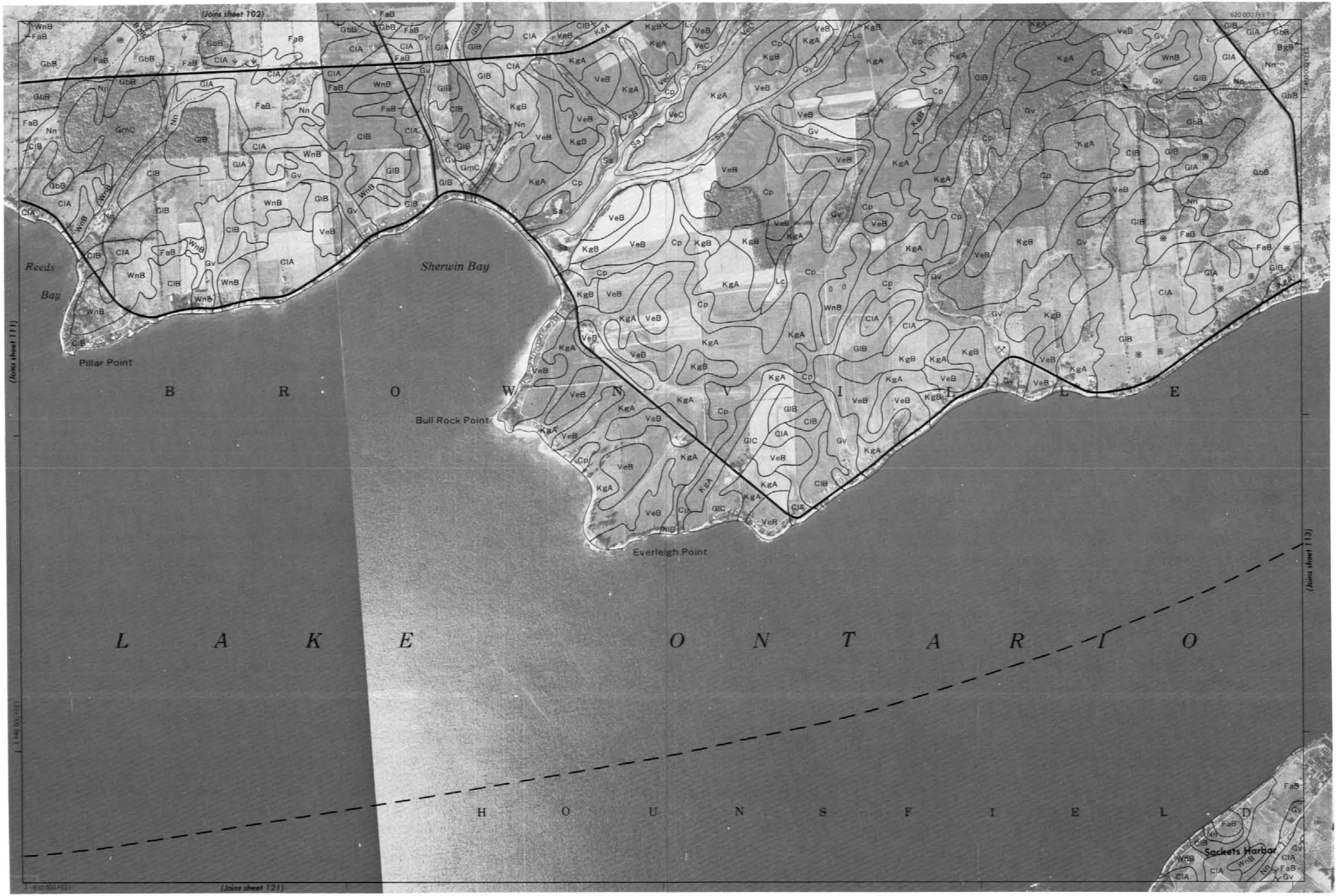
MILE

KILOMETER

0 1/4 1/2 3/4 1

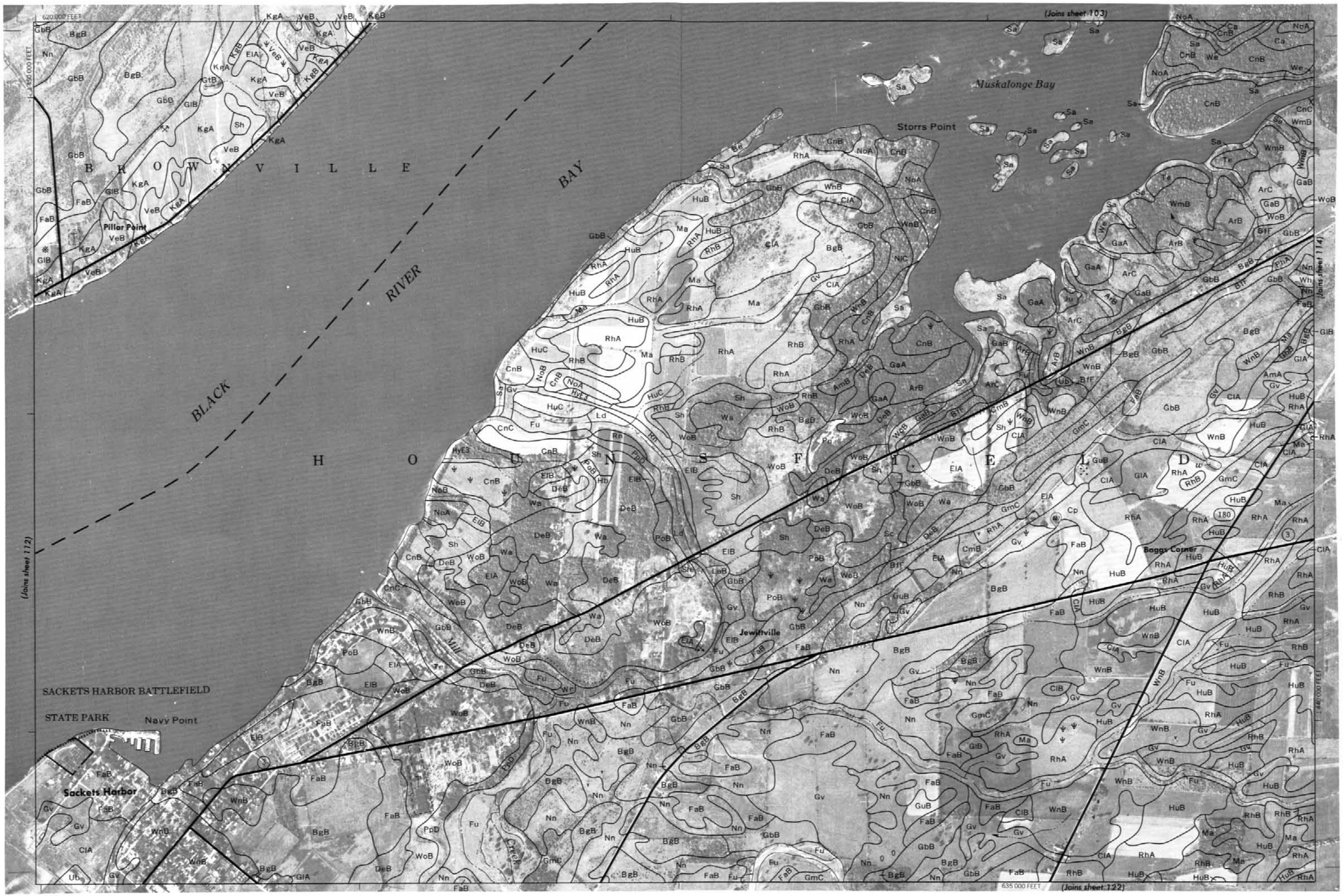
0 0.5 1

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
Scale 1:15 840
0 1/4 1/2 3/4 1
0 0.5 1

114

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

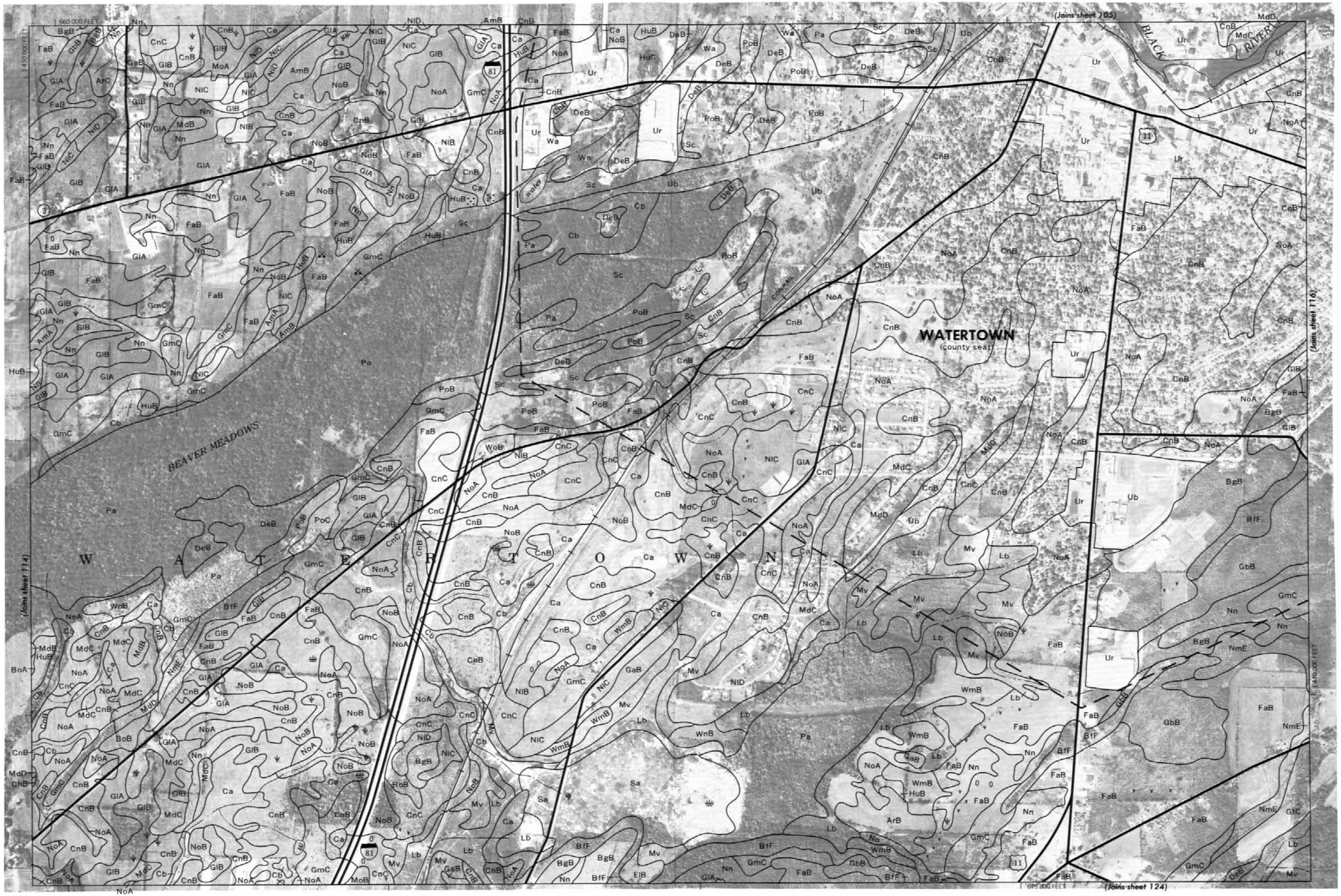
Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 114

JEFFERSON COUNTY, NEW YORK NO. 115

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

MILE
KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
1
0.5

Scale 1:15,840

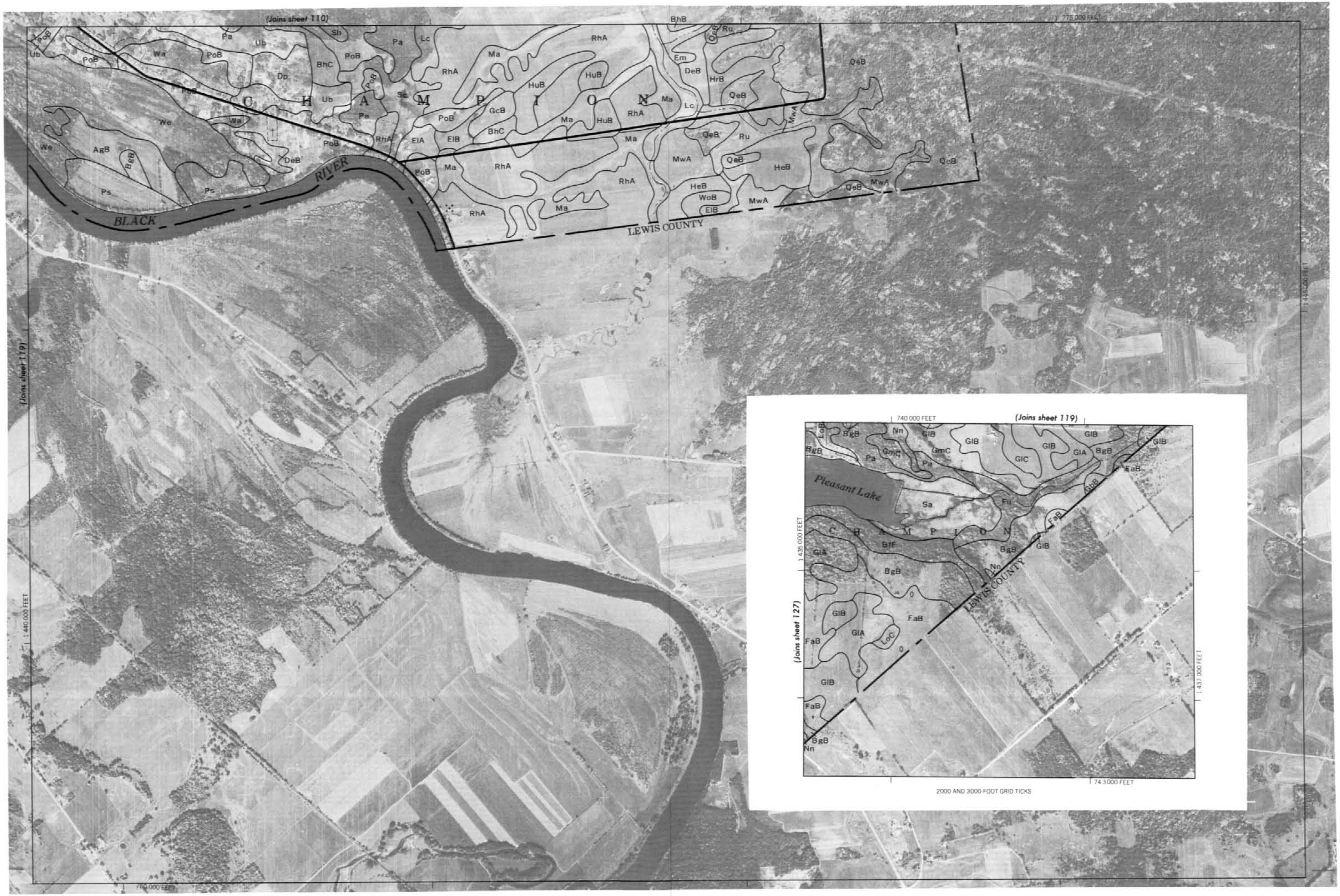
SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0
1/4
0.5
1/2
3/4

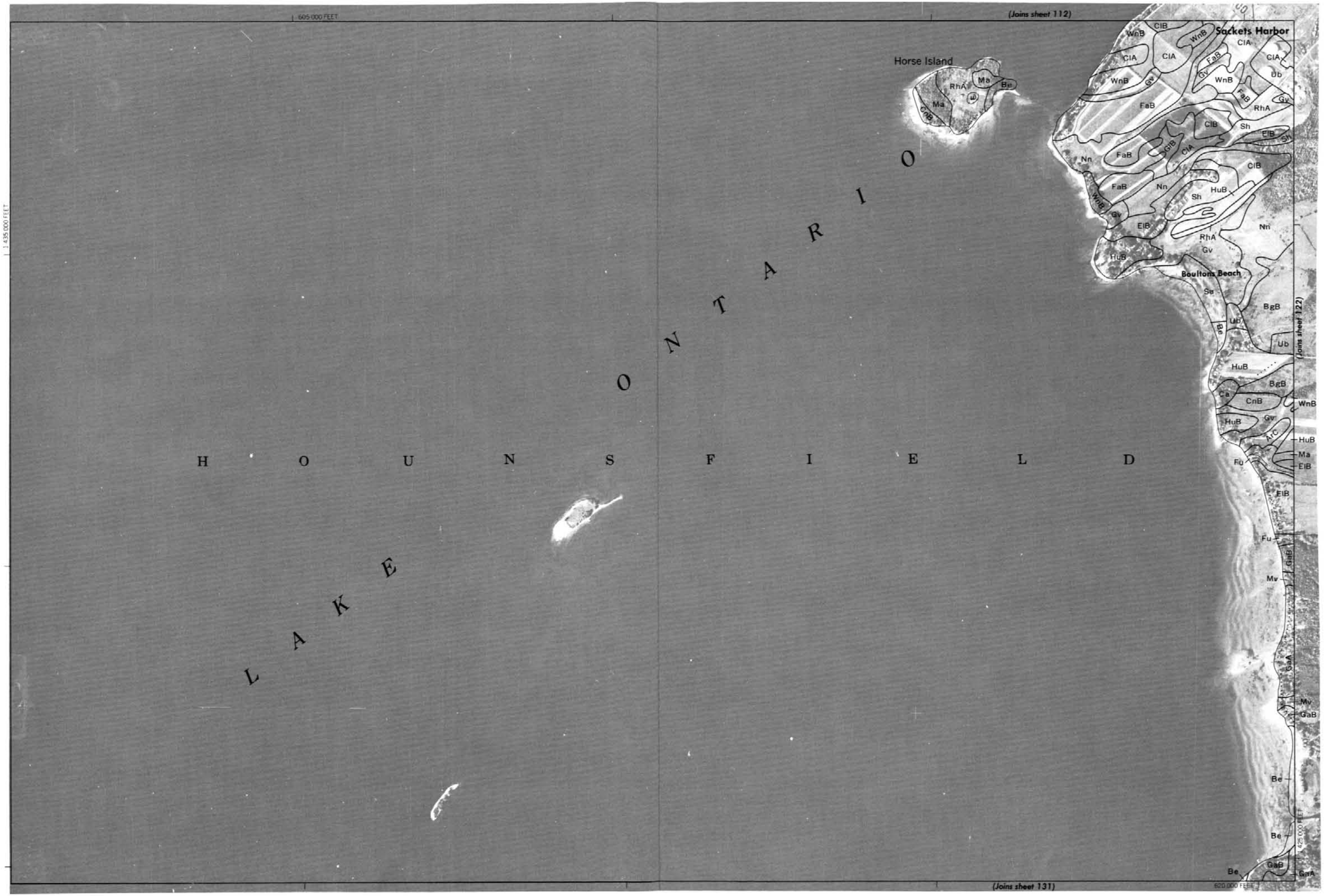
Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

JEFFERSON COUNTY, NEW YORK NO. 121



N

Scale 1:15,840

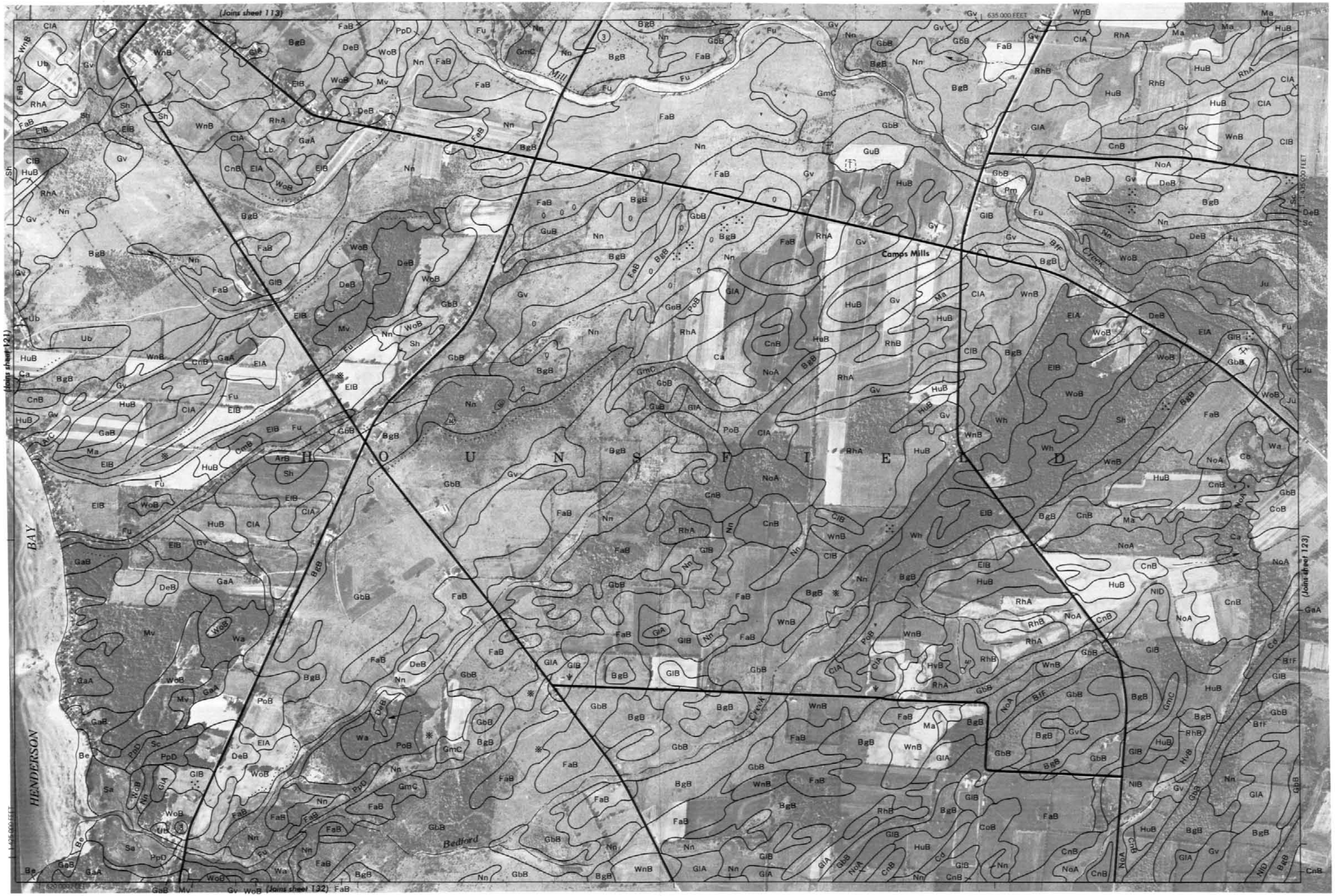
1 MILE

1 KILOMETER

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N



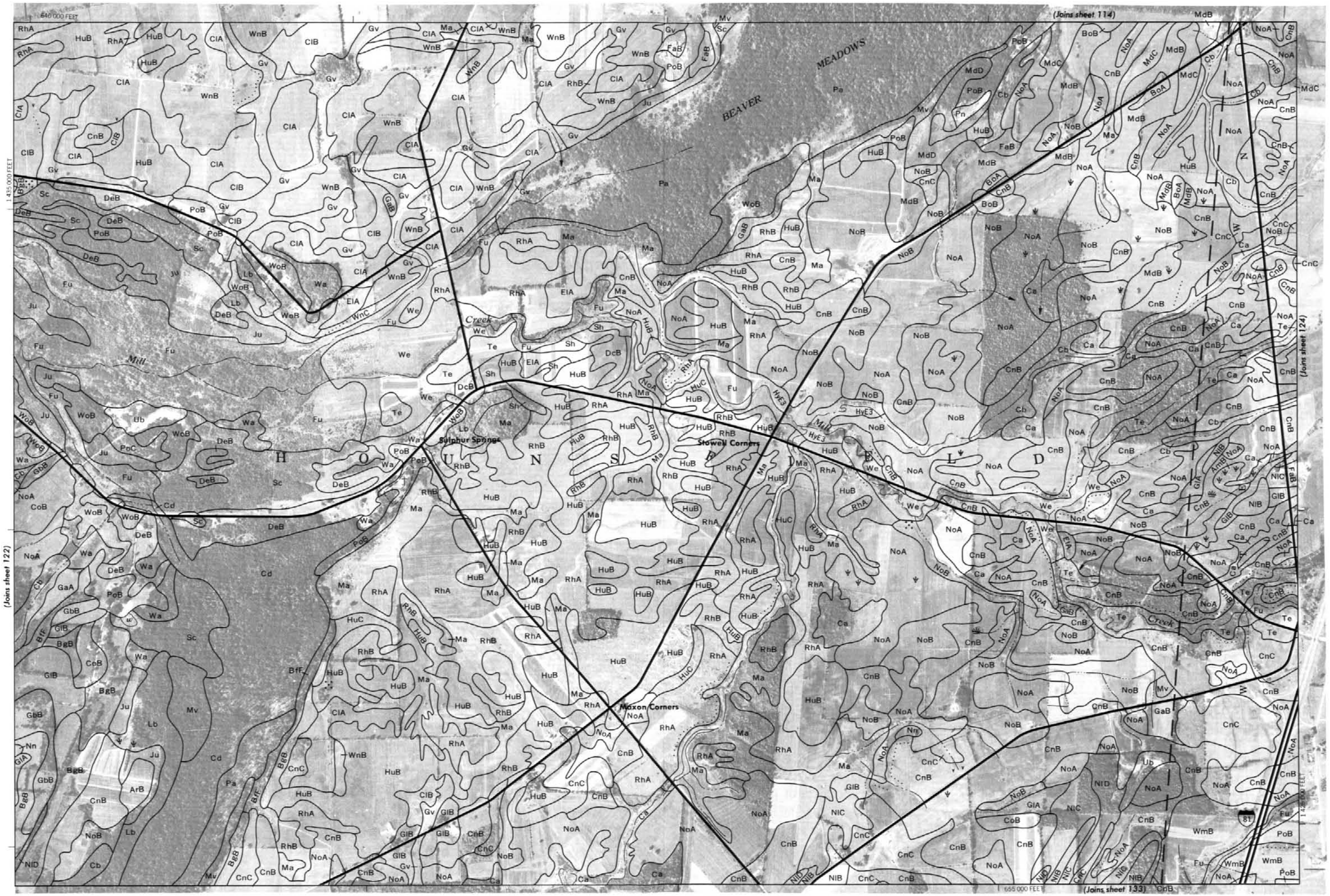
1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 122

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

(Joins sheet 122)



123

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

Scale 1:15,840

0 1/4 1/2 3/4 1

0 0.5 1

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4
0 0.5
Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 126

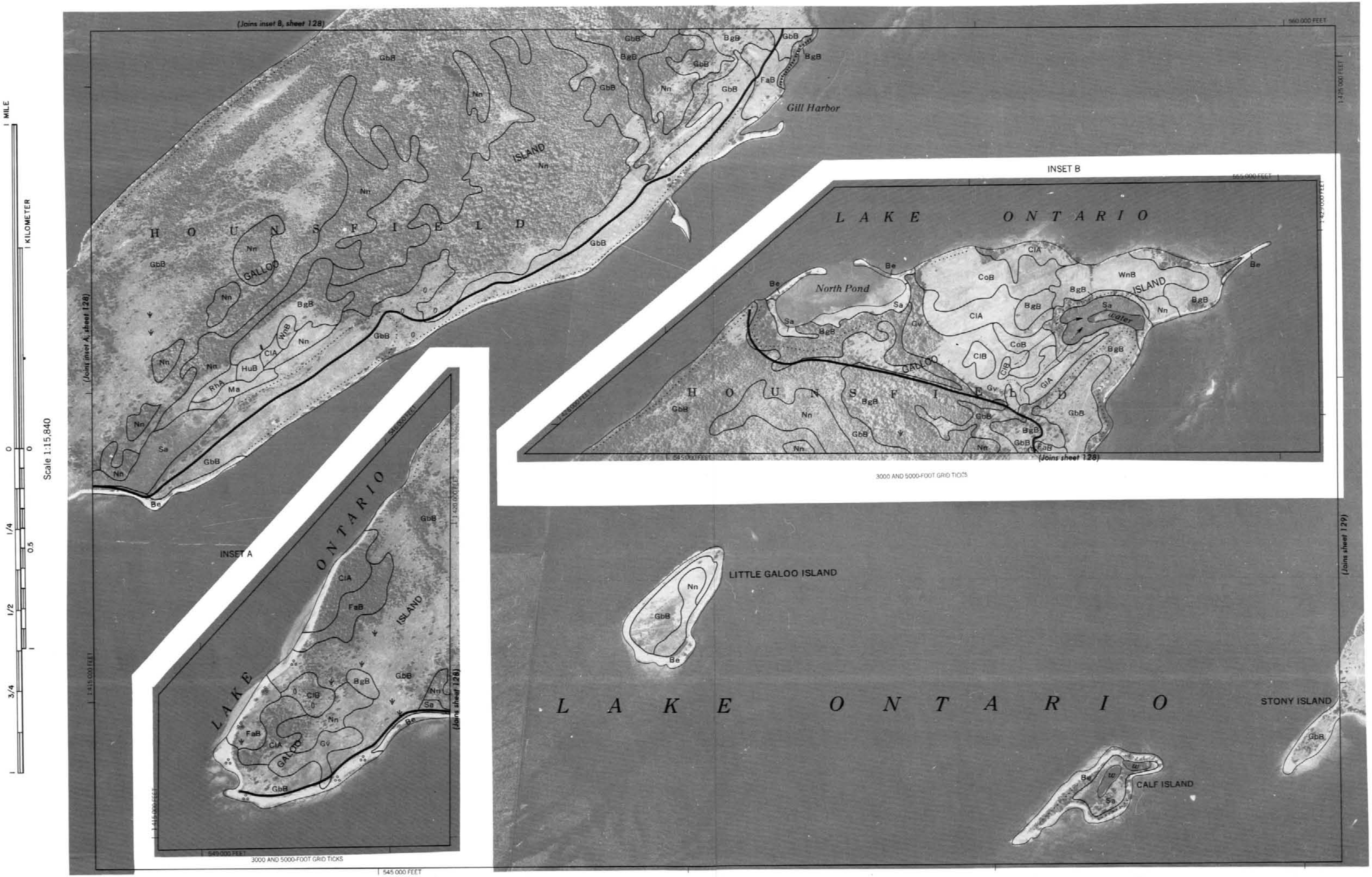
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

127

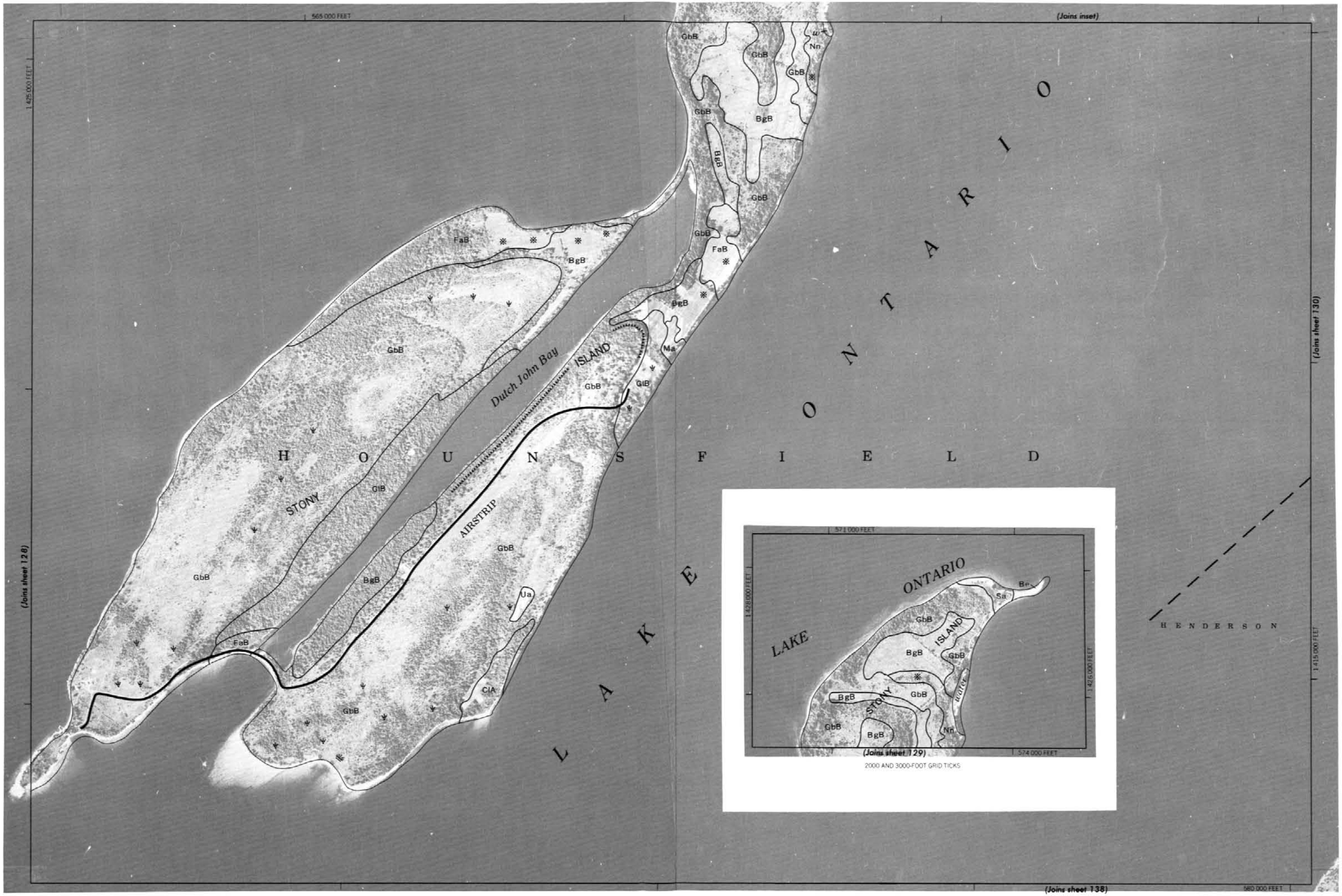
N

MILE
KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



2000 AND 3000-FOOT GRID TICKS

N

1 MILE

1 KILOMETER

Scale 1:15 840

0 1/4 1/2 3/4 1

0 0.5 1

JEFFERSON COUNTY, NEW YORK NO. 129

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

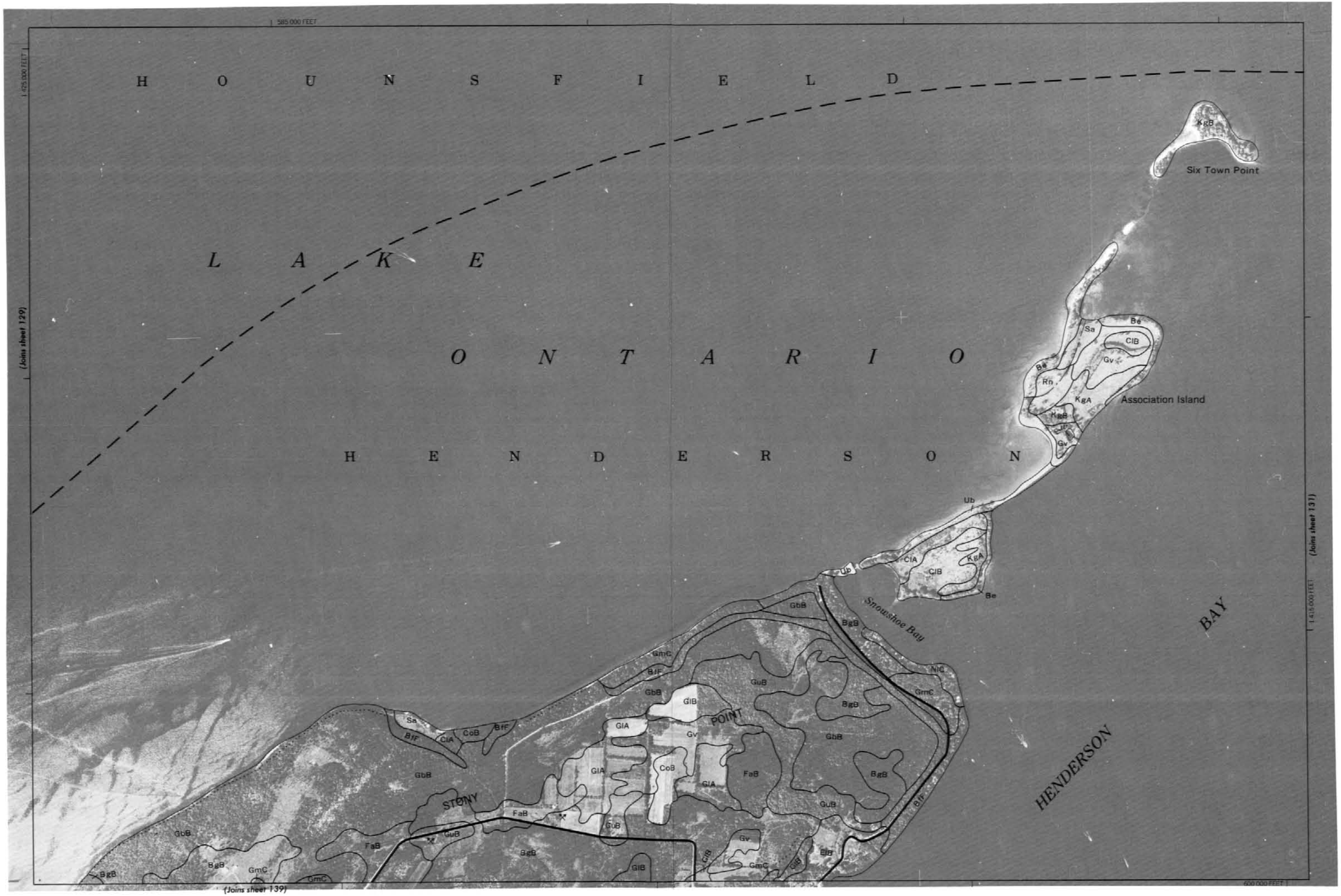
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

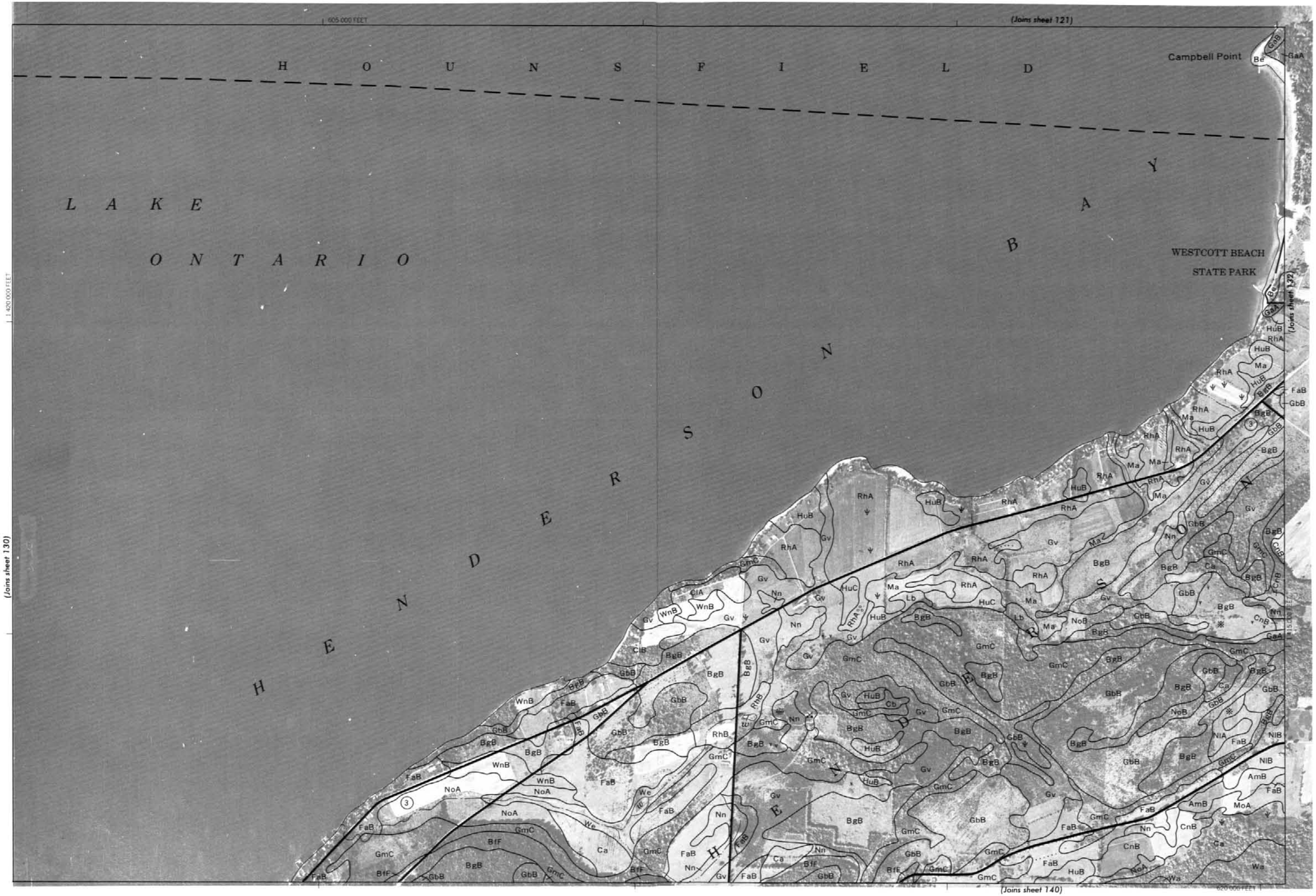
MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 132

JEFFERSON COUNTY, NEW YORK NO. 133

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE

1 KILOMETER

Scale 1:15 840

0 1/4 1/2 3/4 1

0 0.5 1

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

0 | 1/4 | 1/2 | 3/4

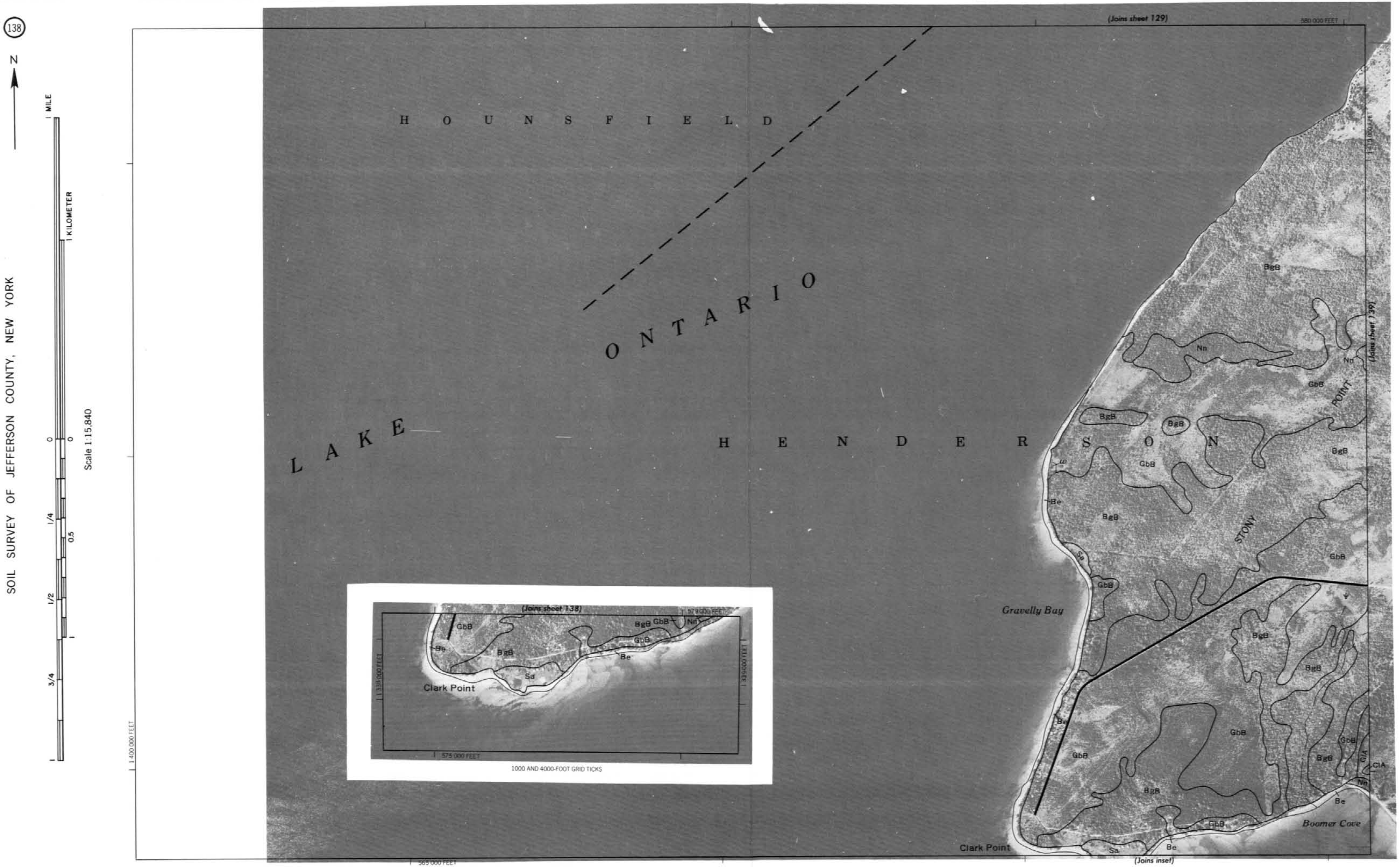
0 | 0.5

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

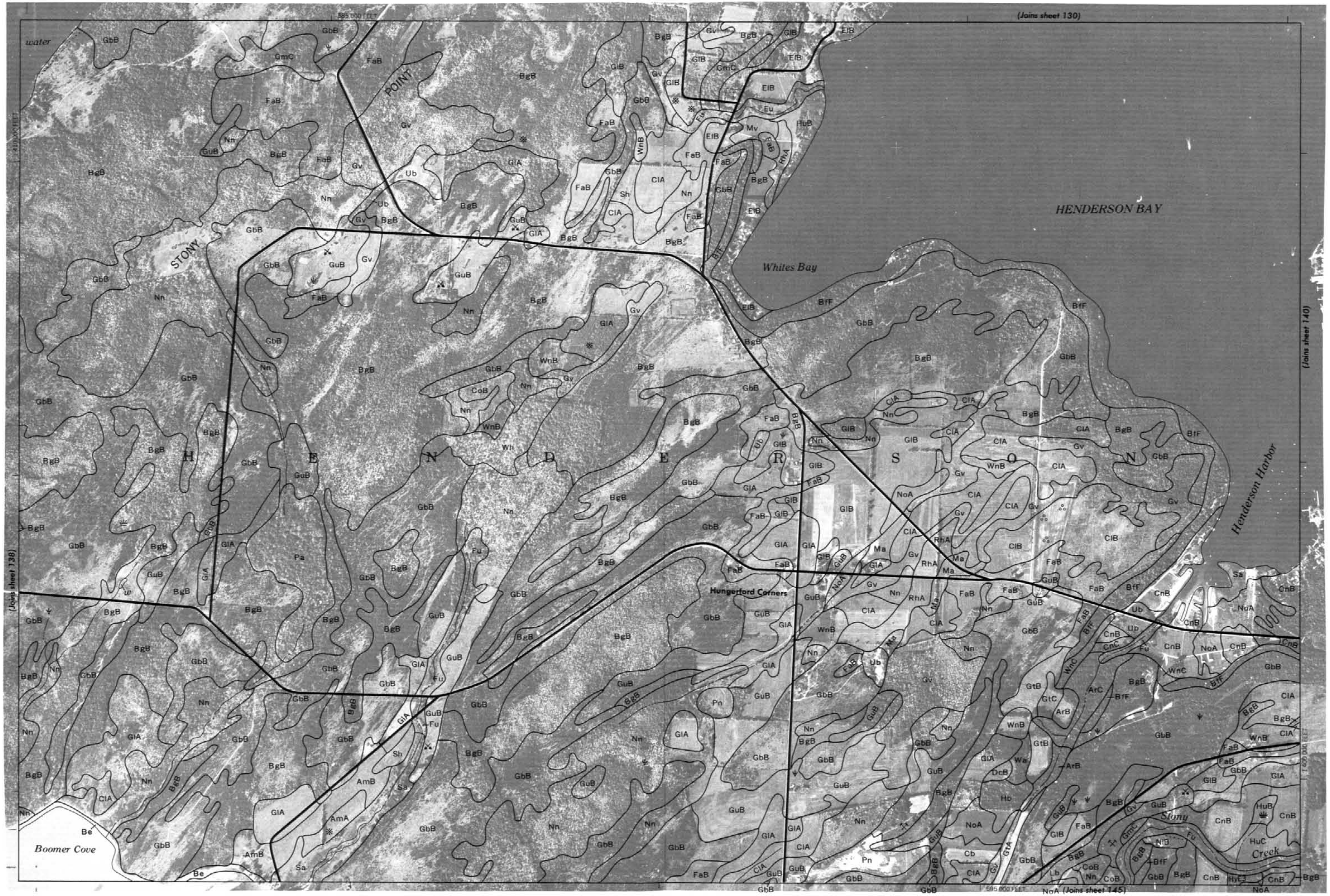
Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 139

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

MILE

KILOMETER

Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

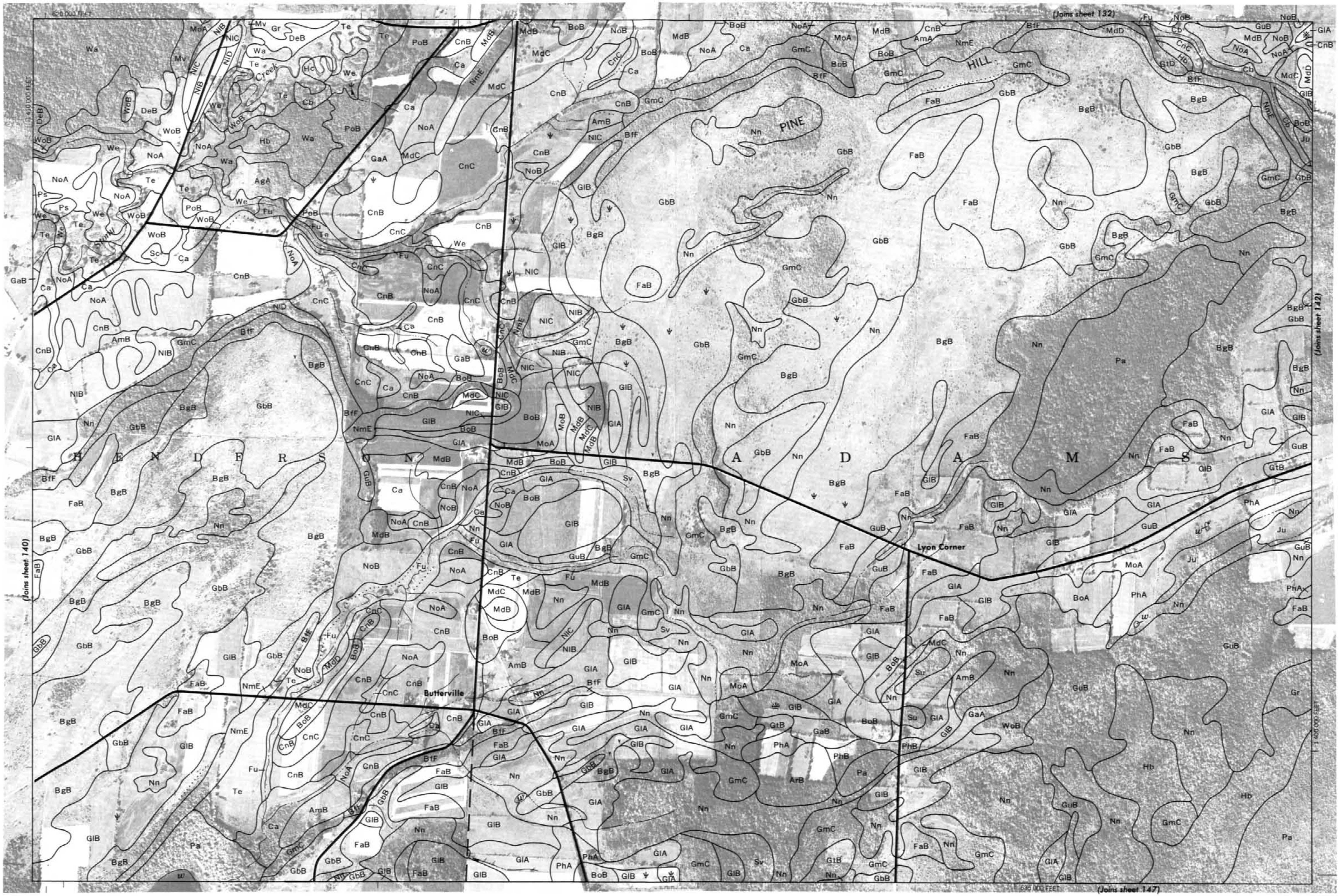
N

1 MILE | 1 KILOMETER | 0 | 1/4 | 0.5 | 1/2 | 3/4 | 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0
0
1/4
0.5
1/2
1
3/4
1
Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 143

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

MILE
KILOMETER
0
1/4
1/2
3/4
1
0
0.5
1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

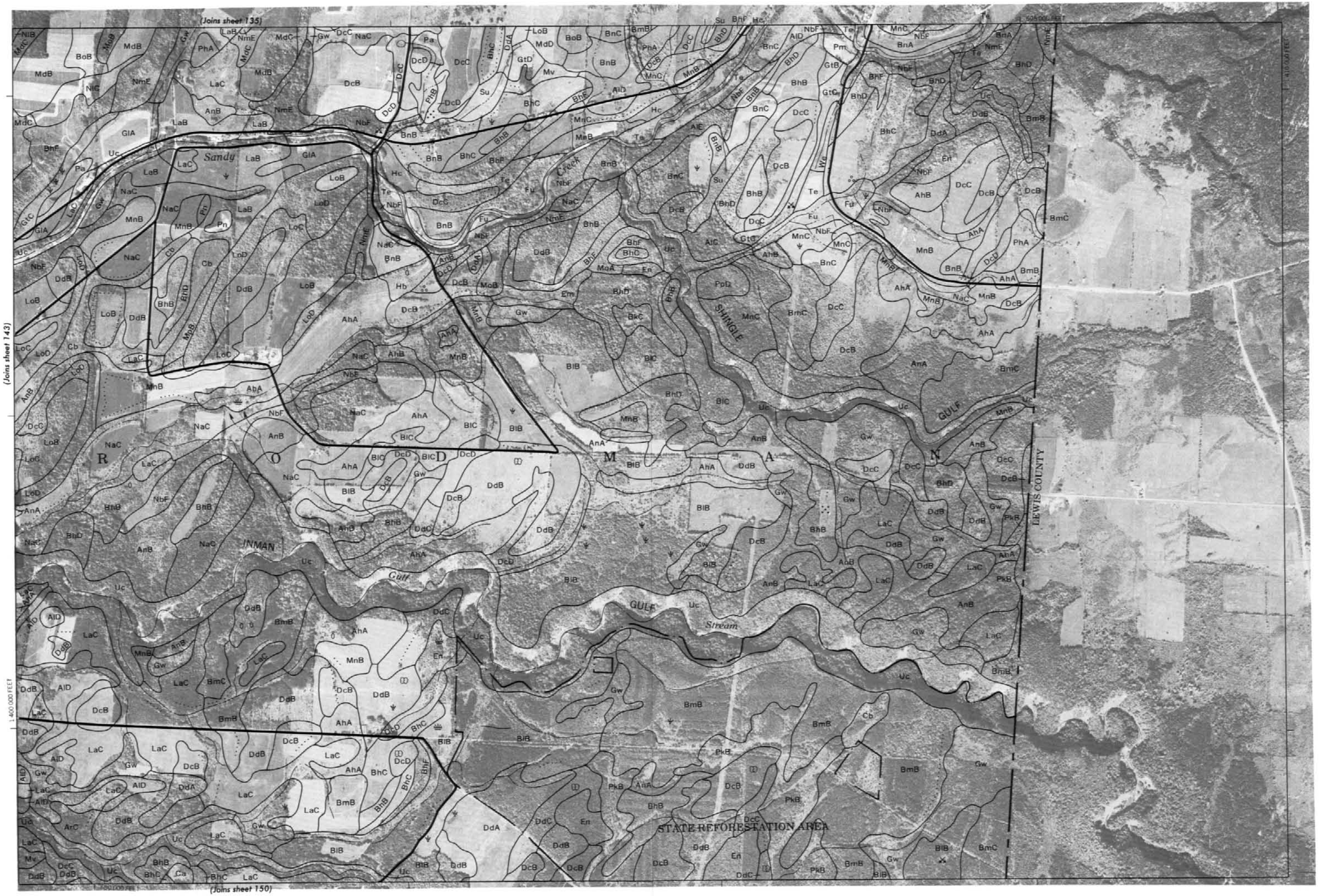
1 MILE

KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

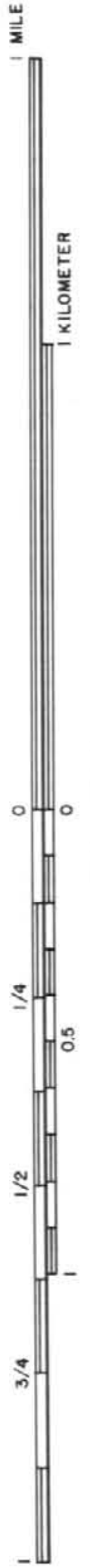
1 MILE

1 KILOMETER

Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 147

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

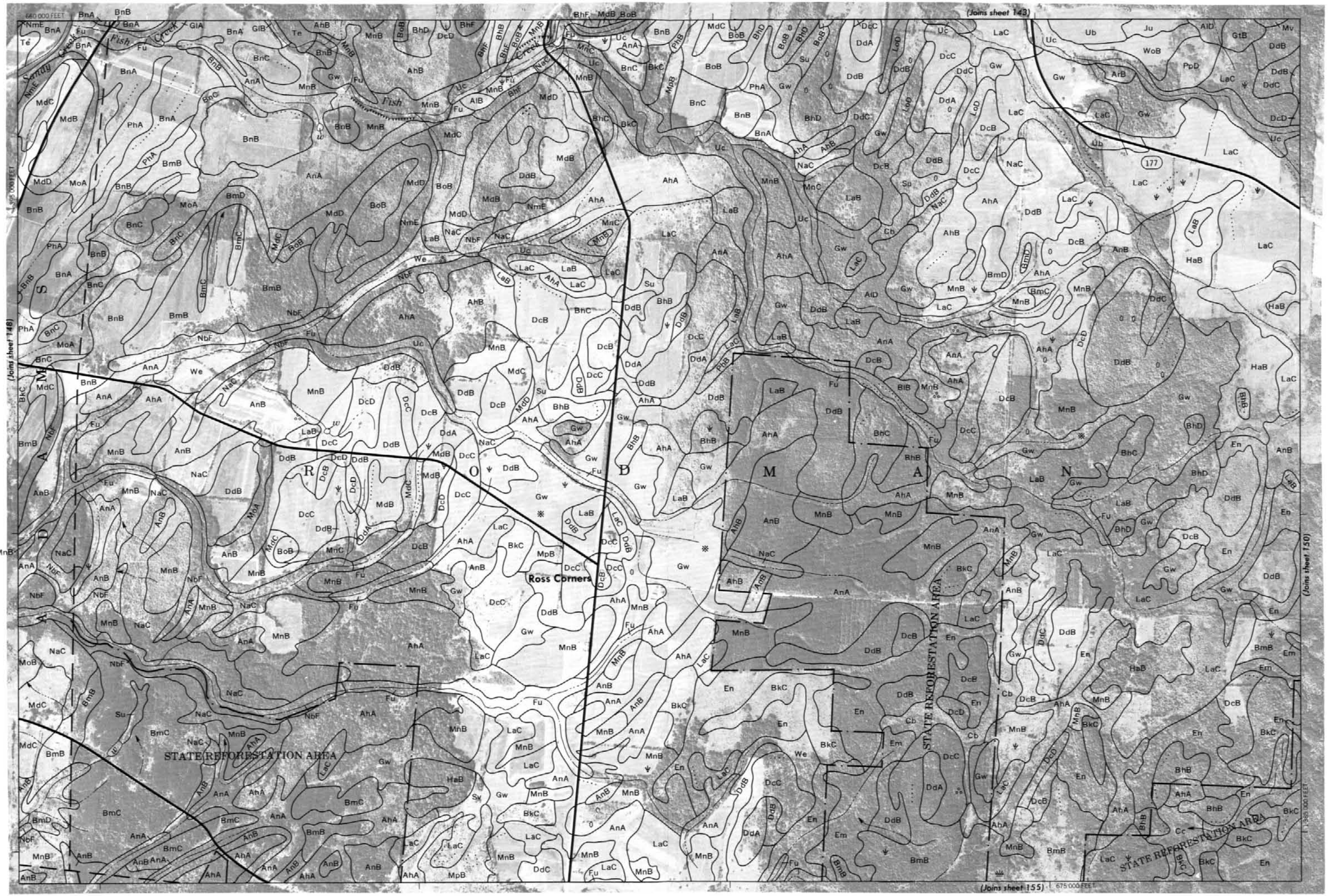
0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE

1 KILOMETER

Scale 1:15 840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

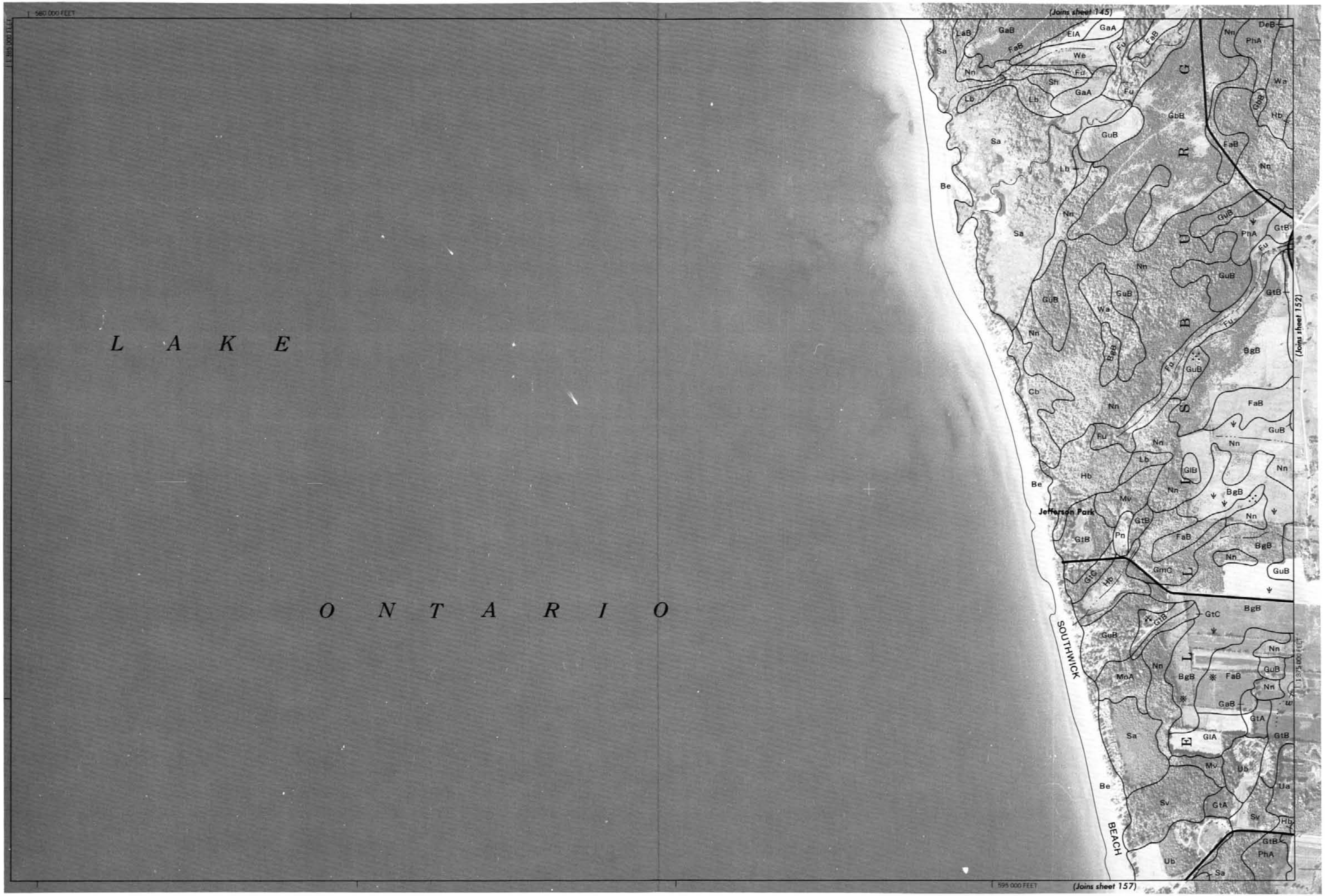
MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

152

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 152

JEFFERSON COUNTY, NEW YORK NO. 153

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

Scale 1:15,840

MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 155

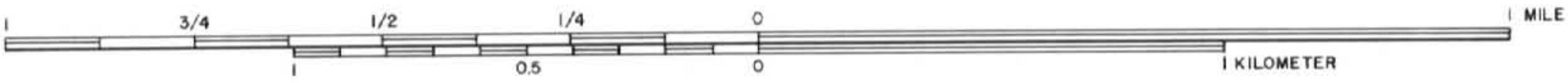
N

MILE
KILOMETER
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N



Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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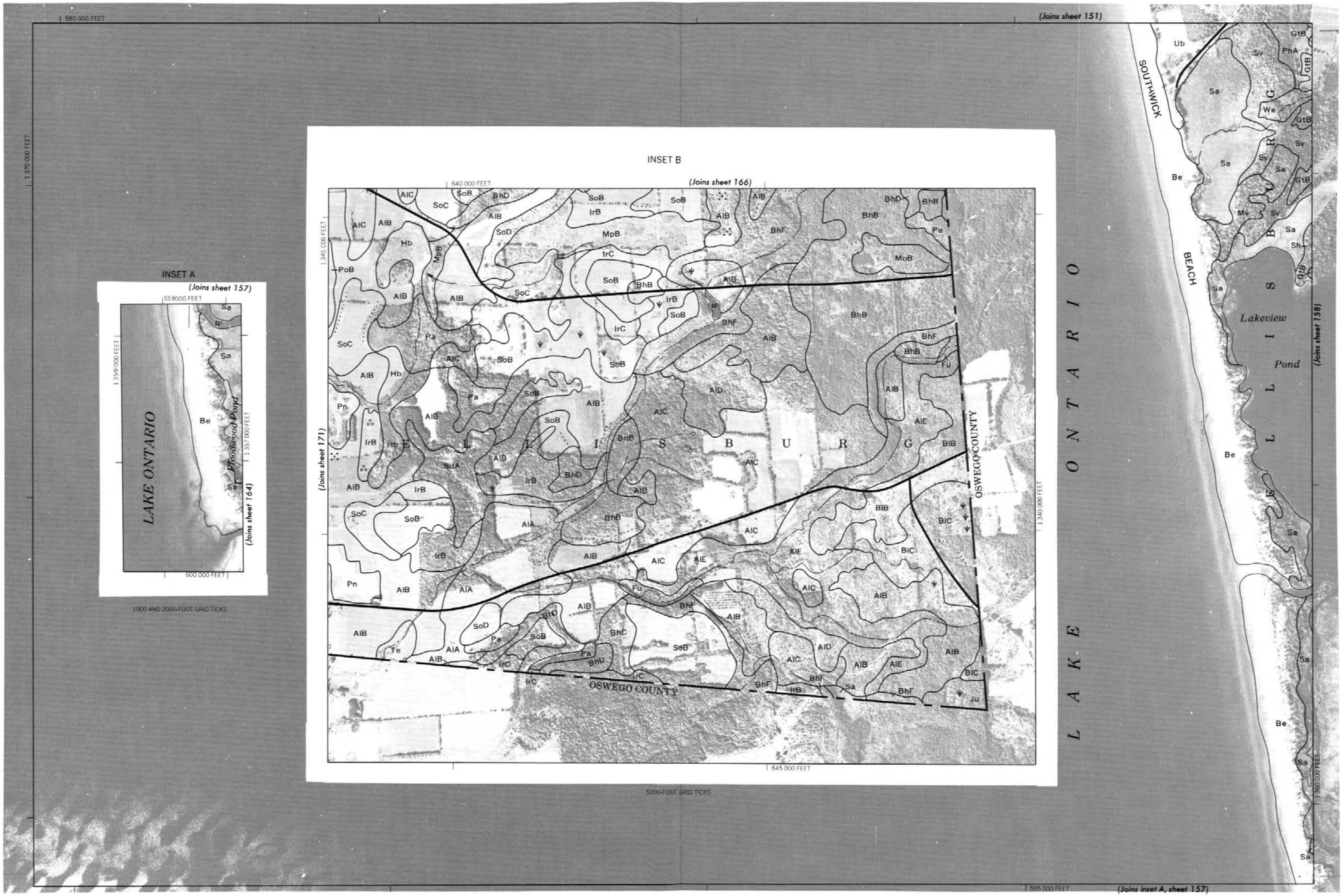


N

Scale 1:15,840

0 1/4 1/2 3/4 1 MILE

0 0.5 1 KILOMETER

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 159

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

MILE 0 1/4 1/2 3/4 1

KILOMETER 0 0.5 1

Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

JEFFERSON COUNTY, NEW YORK NO. 161

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

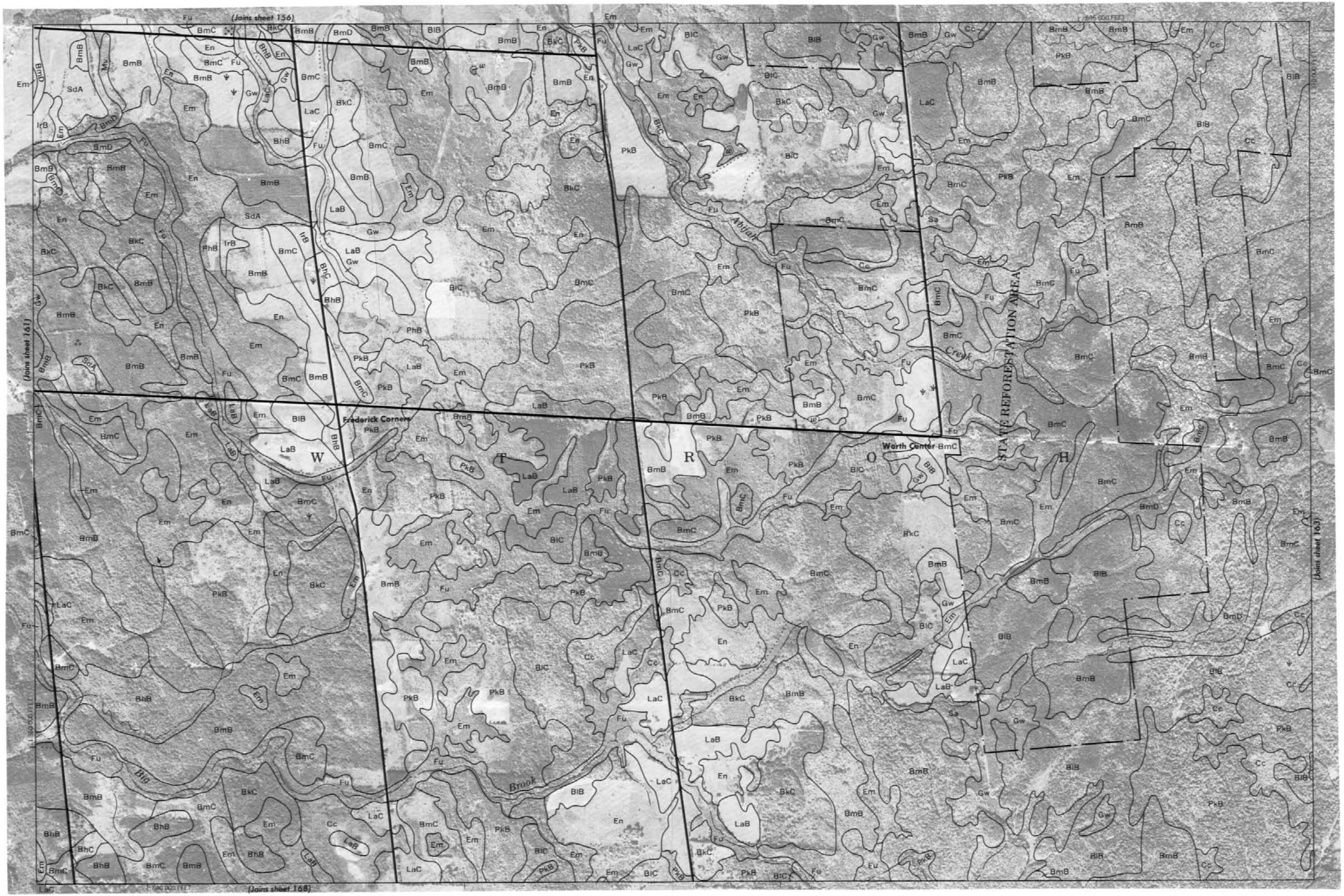
1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

Scale 1:15 840



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography.
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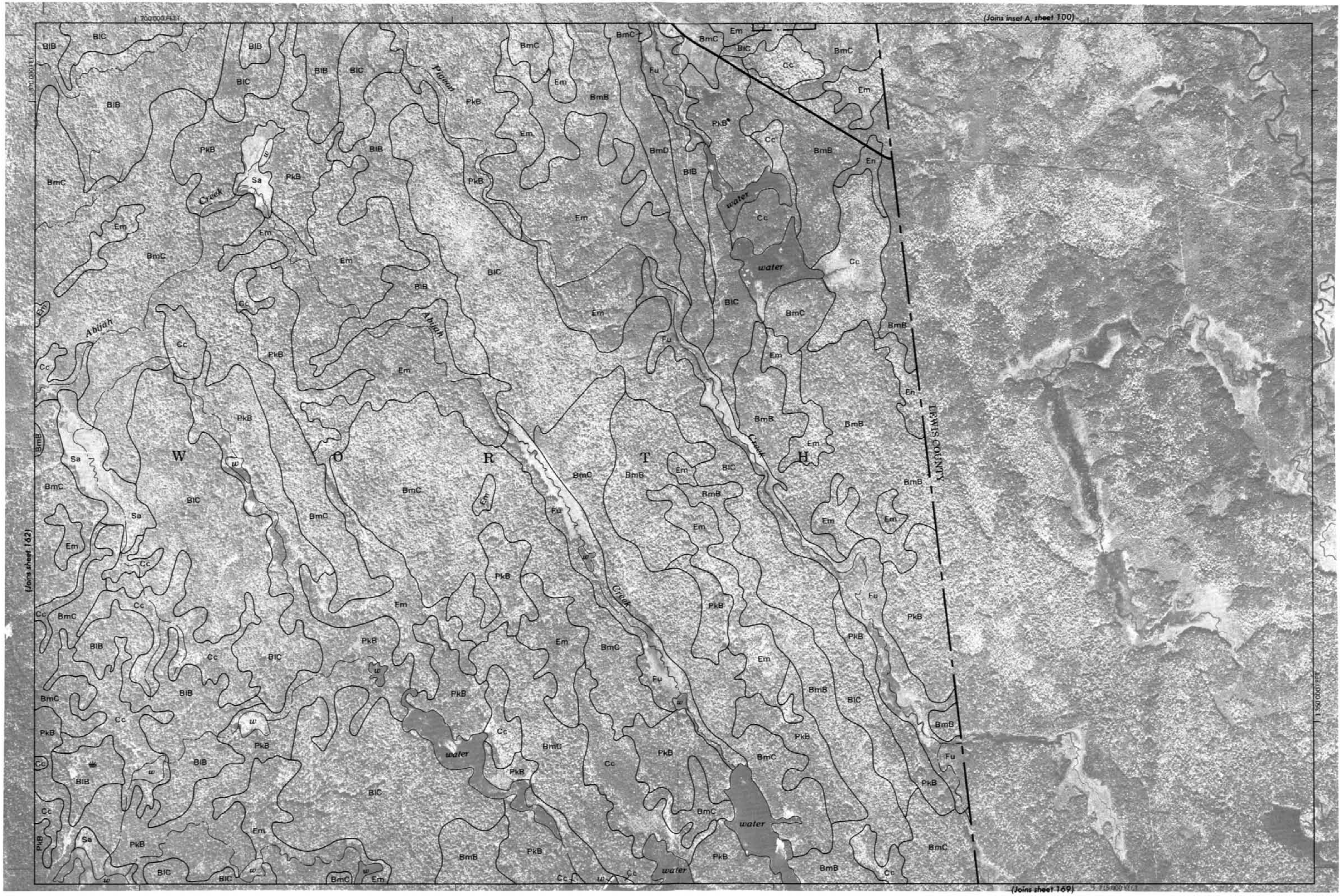
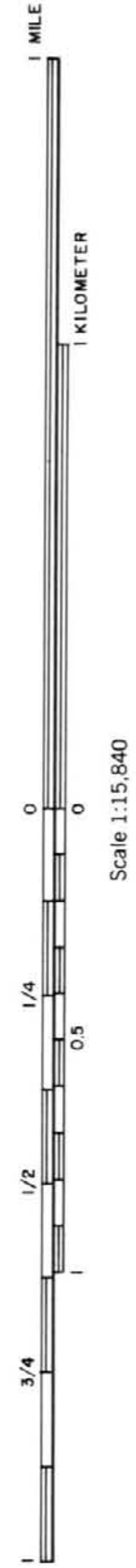


N



Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15 840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

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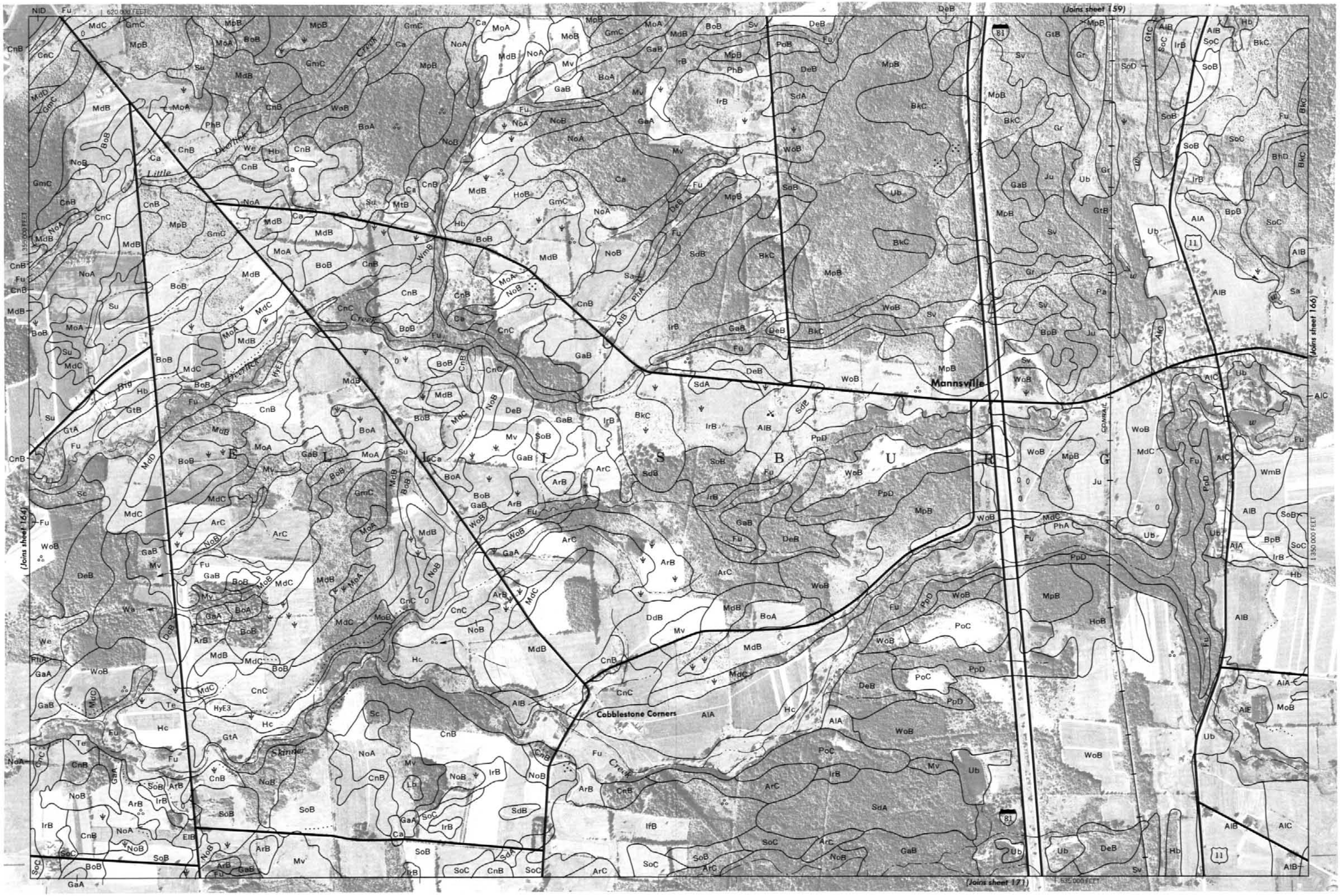
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE

1 KILOMETER

Scale 1:15,840

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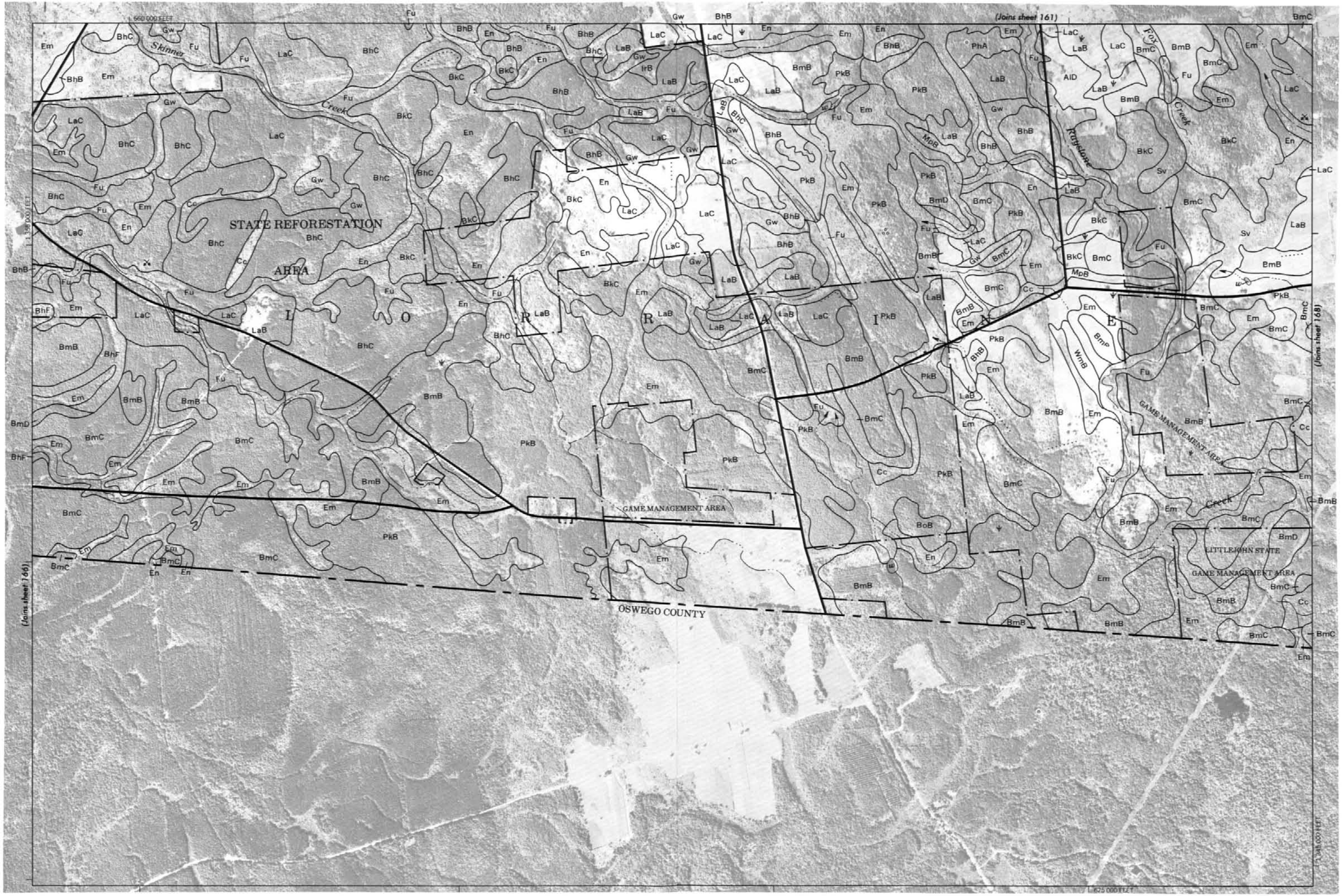

1 MILE
1 KILOMETER
Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

Scale 1:15,840

1 MILE
0 1/4 1/2 3/4
1 KILOMETER
0 0.5

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

1 MILE

1 KILOMETER

0 1/4 1/2 3/4

0 0.5

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK

N

1 MILE
1 KILOMETER
0 1/4 1/2 3/4 1
0 0.5 1
Scale 1:15,840

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

JEFFERSON COUNTY, NEW YORK NO. 171

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

171

N

MILE
0
1/4
1/2
3/4
1
KILOMETER
0
0.5
1

Scale 1:15,840

SOIL SURVEY OF JEFFERSON COUNTY, NEW YORK